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THE EFFECTS OF PENICILLIN SUPPLEMENTS ON THE GROWTH OF CHICKS

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In 1950 Stokstad & Jukes reported that aureomycin improved the growth of chicks on vegetable diets and since then a number of workers have confirmed this effect with a variety of antibiotics added to practical rations containing animal protein (Coates, Harrison, Kon, Mann & Rose, 1951 ; Biely, March, Stevens & Casorso, 1951 ; Matterson, Singsen, Decker & Kozeff, 1951). In the United States it has for some time been commercial practice to include antibiotics in poultry rations but in Britain their use is restricted to experimental work under proper control until such time as a decision is made regarding their free use, which is possible only by amending the existing legislation.*

In 1951 workers at the National Institute for Research in Dairying and Glaxo Laboratories (Coates *et al.*, 1951a) published a preliminary report which suggested that the growth-stimulating effect of antibiotics in the chick was due to suppression of micro-organisms detrimental to the host and that such organisms were present in the Shinfield laboratories but not in the ones at Greenford, where chicks had not previously been kept. This hypothesis of an "infection" which can be detected only by its retardation of growth and which can be overcome by antibiotics was elaborated in a further communication by the same authors (Coates *et al.*, 1952). It was suggested that the conditions on most poultry farms would resemble those at Shinfield, where chicks had been kept continuously for some years and where "infection" might be expected to establish itself. The beneficial effects of antibiotics in practical poultry rations fed on farms might thus be due to a specific effect on the "infection" which allowed the chicks to make greater weight gains ; on "uninfected" premises, such as the Greenford laboratories, such weight gains would occur without antibiotics.

Whether the beneficial effect of antibiotics on growth rate is due to their inhibition of bacteria which inactivate growth factors, such as vitamin B_{12}, to the destruction of some species of bacteria with corresponding multiplication of others which synthesise growth factors, to inhibition of organisms which exert a toxic effect on the host, or to a combination of these mechanisms, is not known. The "infection" at Shinfield was shown to be highly contagious and could be transmitted without direct contact. That such an infection might explain the increased growth rate obtained with penicillin in laboratories in various parts of the world and on poultry farms was a hypothesis which has attracted considerable attention.

Shortly after Stokstad & Jukes (1950) published their work on aureomycin we began some small-scale experiments with penicillin. When Coates *et al.* (1951a) published their preliminary note on the "infection" hypothesis it was decided to extend the work to see whether such an infection could be demonstrated in buildings here, which had been used continuously for chicks for some 10 years past. The experiments are recorded in two parts. Part I deals with experiments carried out in 1950–51 on penicillin supplements fed to chicks in the original buildings. Part II describes four experiments carried out in 1952 in which duplicate groups of the same batches of chicks were reared in old and new buildings ; the latter buildings had never been used by animals and the birds put in them were attended by staff who had no other contact with poultry.

* Since submission of this article, the requisite amending Bill has been placed before Parliament.—*Editor.*

1950–51 EXPERIMENTS

Day-old chicks were obtained from an accredited hatchery in the neighbourhood, were wing-banded and weighed and were transferred to an electrically heated single-tier battery brooder, divided down the middle by a wooden partition so that the two groups of chicks, control and supplemented, were under exactly similar conditions. The birds were usually kept in the brooder for four weeks.

The two groups of chicks in each experiment were obtained by arranging the birds in order of weight and allocating them alternately to the two groups. By this method the average weights in the two groups rarely differed by more than 1 gramme. Weights of individual day-old chicks ranged from 36 to 53 grammes and the mean weights of groups from 39 to 45 grammes. There were 6 to 13 chicks in each group.

Three diets were used. Two were ordinary commercial National Baby Chick Mash from two sources (A) and (B) ; the third was the Olsson (1941) diet (C), fortified with 1 per cent. veterinary cod- iver oil, which has been used successfully for chick rearing for some years at the National Institute for Research in Dairying, Shinfield.

Each chick was weighed weekly. The diet was fed *ad lib.* and wastage was small.

At the end of each experiment the brooder was scraped and cleaned, but not sterilised.

1950-51 Results

The results are summarised in Table I (over-leaf).

Experiment 1.—A preliminary experiment with 12 birds. Penicillin (100 mg. per kg.) in the form of sodium penicillin was added to the diet each day as a freshly prepared solution : the same amount of water was added to the food of the control group. Table I shows the weights at four weeks, with the penicillin group 35·2 grammes ahead of the controls. After six weeks the weight gains were 618·5 and 587·7 grammes, a difference of 30·8 grammes in favour of the birds receiving penicillin. The birds were then put outside in an ark in one group and treated as ordinary commercial birds. When 11 weeks old, having been outside for five weeks, their weights were 1,415 and 1,362 grammes, the birds originally receiving penicillin for the first four weeks being 53 grammes ahead of the controls.

In this preliminary experiment mean weight gains were good and the antibiotic seemed to have an effect.

All subsequent experiments were carried out with dry food to which the antibiotic was added in the form of procaine

TABLE I
1950–51 EXPERIMENTS

Experiment number	Breed	Number of chicks	Sex	Diet	Penicillin (mg. per kg.)	Weight gain at four weeks (grammes)		Difference
						Control	Penicillin	
1/50	R.I.R. × L.S.	12	6 ♂, 6 ♀	A	100	303·3	338·5	+35·2
2/51	R.I.R. × L.S.	26	♀	B	25	158·5	153·3	− 5·2
3/51	R.I.R. × L.S.	26	♂	C	25	228·7	281·8	+53·1
4/51	R.I.R. × L.S.	26	♂	B	25	249·1	310·1	+61·0
5/51	R.I.R. × L.S.	25	♀	A	25	267·9	300·5	+32·6
6/51	N.H.R. & ANC	24	13 ♂, 11♀	B	10	226·1	229·9	+ 3·8
7/51	R.I.R. × L.S.	25	♂	B	10	329·0	322·7	− 6·3

R.I.R. × L.S. = Rhode Island Red × Light Sussex. N.H.R. & ANC = New Hampshire Red (16) and Ancona (8).
Diets A and B were National Baby Chick Mash from sources (A) and (B).
Diet C was the Olsson (1941) diet, supplemented with 1 per cent. veterinary cod-liver oil.

penicillin : sufficient food was prepared to last four weeks and it was kept cool.

Experiment 2.—Penicillin 25 mg. per kg. Commercial diet (B). Weight gains were very poor. This was probably due to the composition of the particular batch of commercial diet used. No symptoms of any specific deficiency were shown and only one bird of the 26 died during the experimental period of four weeks. The amount of food consumed by both groups was small ; there was no obvious difference in growth rate between the two groups.

Experiment 3.—The Olsson diet used was obtained from the National Institute for Research in Dairying, Shinfield, one half of it containing penicillin, 25 mg. per kg. During the fourth week of the experiment the supply of food ran short and there was some limitation of food during that week, which was shown by a slightly lower weight gain in the fourth than in the third week. Weights at three weeks were similar to those in Experiment 1 and it is likely that the final weight would have been similar if food had not been restricted. The birds receiving the antibiotic gave weight gains 53·1 grammes above those of the controls.

Experiment 4.—Penicillin 25 mg. per kg. The commercial diet (B) was from the same source as in Experiment 2, where results were poor, but it was a different batch (considerable variation probably occurs, according to availability of the individual components, although the food has to conform to certain standards for protein, fibre, etc.). Both groups made good weight gains, with the group receiving penicillin 61 grammes ahead at four weeks.

Experiment 5.—Commercial diet (A) with penicillin 25 mg. per kg. Weight gains of birds given penicillin were almost as good as in Experiment 4, but the control birds did well, too, and the difference in favour of the former was only 32·6 grammes.

Experiment 6.—Commercial diet (B). The chicks used were of two breeds, New Hampshire Red and Ancona, and only 10 mg. per kg. of antibiotic was used. Weight gains were only moderate and there was no appreciable difference between the control (226·1 grammes) and supplemented (229·9 grammes) groups.

Experiment 7.—This was identical with Experiment 6, except that R.I.R. × L.S. birds were used as in Experiments 1 to 5. Both groups made excellent gains and the mean weight of the controls was 6·3 grammes more than that of the supplemented birds.

DISCUSSION

These experiments showed great variation in the response to penicillin when chicks of the same breed and source were kept under identical conditions on three diets (Olsson diet and two commercial sources of National Baby Chick Mash). One batch of National Baby Chick Mash from source (B) gave very poor weight gains but the other three batches of this diet all gave good gains.

Table I shows that penicillin gave marked increases in weight gain in four experiments and none in three.

Statistical analysis of the mean weight gains at four weeks showed that the differences between the supplemented and control groups were highly significant in Experiments 3, 4 and 5 and were not significant in the other four experiments. Experiment 1 was a preliminary experiment carried out with only 12 birds and there were considerable variations between them. For this reason the difference, although it appears to be considerable, is not statistically significant.

The seven experiments were carried out in October, January, February, March, April, May and July. The three which gave a statistically significant response to penicillin were those in February, March and April.

It was decided to continue to study this variation in the response to penicillin, with the additional factor of "infection" introduced into the new series.

1952 EXPERIMENTS

A second brooder, identical with the one previously used, was purchased and was similarly divided down the middle by a wooden partition. To simulate the Shinfield conditions one brooder was kept as in 1950–51 in the laboratory where chicks had been reared for some years and where the birds were tended by a person who looked after other poultry on the premises and also on a neighbouring farm. The other brooder was placed in a newly constructed building, never previously occupied by animals, and the birds were tended by a person who attended no other poultry, either at the Field Station or at home. It was thought that this might provide conditions somewhat like those at Greenford (new buildings).

In these experiments, four in number, control and supplemented chicks were thus kept under two sets of conditions—in "infected" and in "clean" premises. The Olsson diet, obtained from Shinfield, was used in three experiments and National Baby Chick Mash from source (A) in the fourth. Penicillin, 25 mg. per kg., was incorporated in half of each batch and the food was kept cool throughout the experiment to minimise loss of the antibiotic.

1952 Results

The results are summarised in Tables II and III.

TABLE II
1952 EXPERIMENTS

Experiment number	Breed	Number of chicks	Sex	Diet	Penicillin (mg. per kg.)	Weight gain at four weeks (grammes)					
						Old building			New building		
						Control	Penicillin	Difference	Control	Penicillin	Difference
1	R.I.R. × L.S.	48	♂	C	25	286·6	276·8	− 9·8	261·3	268·3	+ 6·9
2*	R.I.R. × L.S.	48	♂	C	25	235·7	220·3	−15·4	229·7	191·6	−38·1
3	R.I.R. × L.S.	48	♀	C	25	185·2	234·4	+49·2	209·0	209·0	0·0
4	R.I.R. × L.S.	56	♂	A	25	269·5	268·0	− 1·5	257·7	286·0	+28·3

* Birds in old building had access to faeces from hen houses on poultry farm, for seven days after they were put on experiment.
C = Olsson (1941) diet, supplemented with 1 per cent. veterinary cod-liver oil. A = National Baby Chick Mash from source (A).

TABLE III
EXPERIMENT 4—1952. DIET (A): PENICILLIN 25 MG. PER KG.

Age	Number of birds	Weight gain (grammes)					
		Old buildings			New buildings		
		Control	Penicillin	Difference	Control	Penicillin	Difference
24 hours to 5 weeks	56	359·8	353·8	− 6·0	356·9	358·5	+ 1·6
5 to 13 weeks	32	772·1	811·6	+39·5	724·0	826·3	+102·3
24 hours to 13 weeks	32	1,116·1	1,173·6	+57·5	1,183·0	1,277·0	+ 94·0

Experiment began with 56 chicks in four groups of 14 (old and new buildings, penicillin and control). Table II shows gain in first four weeks. At five weeks the groups were reduced to eight (32 in all).

Experiment 1.—February, 1952. The chicks in the new building were in a brooder in a stall which was unheated, whereas the others were in a similar brooder in a room which was heated during the day. In spite of this difference all four groups of chicks made good weight gains, with very little difference between them, whether in old or new buildings and whether given penicillin or not. The birds in the new building did badly during the third week but made up for this by making better gains in the final week. This first experiment gave no support to the hypothesis that an "infection" which could be overcome by penicillin existed in the old buildings. Care was taken to prevent contact between old and new buildings by using separate staff, isolation of utensils and separation of food as soon as it was received.

Experiment 2.—March, 1952. Since no sign of an "infection" had appeared in Experiment 1 an effort was made to facilitate its introduction by scattering in the food troughs of the chicks in the old building a pailful of faeces collected from the hen houses on a large poultry farm in the vicinity. In spite of this procedure being adopted for the first seven days after the chicks were received, there was no difference between the weight gains of chicks in the two sets of buildings. In both buildings the control chicks made better gains than those given penicillin.

Experiment 3.—April, 1952. Weight gains in all four groups were only moderate, but it must be pointed out that female chicks were used. In the old buildings, where "infection" might have existed, there was a response to the antibiotic. The two groups of chicks in the new buildings made exactly equal weight gains which were somewhat less than those of the supplemented birds in the old buildings.

Experiment 4.—May-June, 1952. All groups made good weight gains. The chicks in the new buildings showed a better weight gain with penicillin. There was no response in the old ("infected") buildings. At the end of five weeks the control chicks in the new building had caught up with the supplemented chicks and all four groups were of almost identical mean weights, which shows that it is not always safe to assume a significant difference from a single weekly weighing.

At the end of the fifth week eight birds were selected at random from each group and the rest were removed because the brooders were becoming overcrowded. These four groups of eight birds were kept on the experiment with penicillin for a further eight weeks. Table III shows the weight gains for the first five weeks (four groups of 14 chicks each), for the next eight weeks (four of eight chicks) and for the whole period of 13 weeks for the smaller groups. It will be seen that during the 5th to 13th weeks there appeared some evidence of a response to penicillin in both sets of buildings, whereas at the end of the first five weeks all four groups of birds had made almost exactly equal weight gains. When considered over the whole period of 13 weeks the results show a response to penicillin which was about twice as great in the new buildings. These results are the opposite of what would be expected if an "infection" existed in the old buildings which was controlled by the antibiotic. Weight gains over the whole 13 weeks were good in all four groups, with a response of some 5 per cent. to penicillin in the old buildings and 8 per cent. in the new buildings.

Statistical analysis of the 1952 experiments gave confusing results. Experiment 1 did not show any significant difference between the penicillin groups or between the two sets of buildings. Experiments 2 and 3 showed significant differences in respect of penicillin, as compared with the control groups, but the two experiments pointed in opposite directions, Experiment 2 favouring the control groups and Experiment 3 the penicillin groups. Some evidence of the old buildings giving better weight gains than the new was obtained from Experiment 2; this is quite contrary to what was expected for it was in this experiment that faeces were put into the

brooder in the old building in order to increase the opportunity for introducing an "infection." Experiment 4 failed to show any significant difference in respect of the antibiotic or the two sets of buildings.

Discussion

The 1952 experiments gave no evidence of the existence of an "infection" which responded to the administration of penicillin. In the old buildings, in which infection might be supposed to exist, in only one experiment (Experiment 3) was there a greater gain in the first four weeks in the group given penicillin. In the new buildings, where precautions were taken to avoid introducing infection, the chicks given penicillin made better gains in one experiment (Experiment 4), but an almost equal loss occurred in the supplemented chicks in Experiment 2. Taken together, the four experiments suggest that for the first four weeks penicillin did not regularly produce better weight gains: total mean gains were hardly greater than total mean losses when the four experiments and the two sets of buildings are considered.

With chicks on an adequate diet containing animal protein, an antibiotic may well have little or no growth-stimulating effect, for such conditions do not favour infection, and growth without antibiotic may already be almost maximal.

That the chicks in these experiments were healthy on arrival and that the conditions under which they were reared were satisfactory is suggested by the weight gains and the low mortality—only 13 of 364 birds died during the experiments, and nine of these succumbed during the first week after hatching. The average of the mean weight gains of all groups at four weeks was 259 grammes for birds given penicillin and 246 grammes for the controls. The difference was greater for the 1950–51 experiments than for those in 1952 but in both cases it was small (26·3 grammes for the first series and 2·3 grammes for the second), and variation was marked from group to group. If one had decided to take the weight at three or five weeks instead of at four weeks there were instances where the results would have been reversed. Again, not all birds in a group behaved alike and the differences between groups were sometimes contributed mainly by only a proportion of the birds in the group, a fact which is not appreciated unless the birds are weighed individually.

These findings suggest that further experiments with commercial diets and a variety of breeds and conditions of management require to be carried out before the value of penicillin for birds reared on ordinary practical rations as used in this country can be properly assessed. It seems wise to withhold the unrestricted use of antibiotics as poultry food supplements until such work has been done. Wilson (1952) states that for turkey poults the use of penicillin is uniformly beneficial and this may well be because the young poult is more susceptible to infection than the young chick; the antibiotic may then exert a twofold effect, reducing mortality and promoting better weight gain, the former being the more important and the more uniform effect. For any group of chicks there is a maximum weight which can be reached, depending on breeding, diet and management. If the diet and management provided give a weight gain which approaches this maximum it is unlikely that adding an antibiotic will have much effect; but where an inadequate diet or exposure to infection produces losses and poor growth an antibiotic may well help. It would seem unwise to use antibiotics in poultry practice in order to try to overcome the deleterious effects of bad feeding and management, for although such a procedure may produce better weight gains there is much more to be obtained by better breeding, feeding and husbandry, not least being a higher resistance to a variety of diseases and a healthier stock. If the results on farms are similar to these recorded here it is doubtful whether the gain justifies the monetary return on those farms where good feeding and management already give excellent weight gains.

So far there seems to be no evidence of any ill effects from penicillin supplements fed to chicks or pigs. In the adult sheep Turner & Hodgetts (1952) have recently reported that aureomycin depresses the ruminal flora, reduces fermentation and production of organic acids and causes a loss of appetite and fall in bodyweight. The continued administration of antibiotics is a procedure which may be expected to have profound effects on the flora of the alimentary tract and if it is to be adopted as a commercial practice it would seem advisable to watch for undesirable effects.

Conclusions

A series of 11 experiments on day-old chicks reared for four weeks on commercial chick rearing mash or on an adequate experimental diet showed variable results when penicillin supplements (mainly 25 mg. per kg.) were given. Control and supplemented groups were reared in the two halves of the same brooders and four experiments were duplicated in two sets of buildings to see whether an "infection" which responded to penicillin could be demonstrated in old buildings used for chicks for some years as compared with new buildings which had never housed animals and had separate attendants. There was no difference in the weight gains of chicks in the two sets of buildings, even in one experiment in which for the first week after hatching the droppings from a poultry farm were scattered in the food troughs.

It is concluded that with adequate diets the young chick does not benefit regularly from a supplement of penicillin. Since no "infection" could be demonstrated in the old premises it seems unlikely that one is ubiquitous where chicks are kept for long periods and further work is needed before the existence of such an "infection" can be held to justify the feeding of penicillin supplements under practical conditions of poultry rearing.

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RECENT WORK ON HUSK*

A Preliminary Report on an Atypical Pneumonia

BY

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Introduction

This summer, in the University of Glasgow Veterinary School, we commenced an investigation into husk. One part of our work was an enquiry into a respiratory disease which we have recognised over the past three years as a complicating factor in clinical husk. We have now established that there is a specific disease of widespread distribution which is a serious cause of calf morbidity and which cannot be related to the presence of lungworms, although it may affect an animal which is suffering from parasitic bronchitis.

This pneumonia is characterised by an expanding peribronchial lymphoid hyperplasia which appears to the naked eye and microscopically as a peribronchial cuff. Until the aetiology has been elucidated we suggest that the term "cuffing pneumonia" might be used.

Distribution

During the summer and autumn of 1952 we have had the opportunity of investigating outbreaks of pneumonia clinically diagnosed as husk on 22 farms in the West of Scotland. From nine of those farms a total of 27 animals was admitted to hospital for detailed examination ; 20 were autopsied while the remaining seven are still under observation. In addition, lungs and pieces of lung showing cuffing pneumonia have been obtained for histological examination from the counties of Ayr, Renfrew, Lanark, Dumbarton, Stirling, Argyll, Kirkcudbright, Wigton, Cumberland, Surrey, Somerset, Devon, and from Northern Ireland.

Age Incidence

The pneumonia has been found in all age groups of animals from calves a few weeks old which had not been out of doors, to milking cows ; most of the severe cases were in the 3 to 12 month age group.

Epidemiology

The exact means by which this pneumonia is introduced into a herd, the subsequent spread through the herd and the maintenance of the infection in the herd have not yet been determined. It is of interest to note that the experimental introduction of diseased calves into a calf house resulted in the onset of symptoms in previously healthy calves, after about 14 days. These calves were not in direct contact with each other and the transmission may have been airborne, but special precautions to avoid contamination by feeding pails, attendants, etc., were not taken. Under these conditions, all calves introduced to this house developed cuffing pneumonia as verified at autopsy.

One farm, which in 1951 lost the complete calf crop (23 pedigree Friesians), was visited regularly this year. Losses were again serious, several calves dying in the pen before going to grass, and all but five of the remainder succumbing when put to grass. Those dying indoors showed cuffing pneumonia, while those dying outdoors showed a combination of this disease and severe parasitic bronchitis. The farmer disposed of his last five calves and agreed to rear three one-day-old calves in the pen formerly occupied by the animals which had succumbed to cuffing pneumonia. These animals were never in contact with diseased calves and were reared indoors, without access to grass. When examined after three months they showed clinical signs of a pulmonary lesion and autopsy revealed cuffing pneumonia to be present. This indicates that the disease may be spread by the contamination of the premises with the infective agent.

On another farm where all age groups of cattle were affected, there was a history of moderate attacks of coughing among the cows each autumn. These cows were examined and the clinical signs showed that a pulmonary lesion was present. Two 14 - year - old animals were slaughtered and the presence of cuffing pneumonia was confirmed at autopsy. The presence of the disease in the indoor calves was similarly confirmed. This raises the possibility of the reservoir of infection being in the older animals.

A peculiar fact is that the main outbreaks of cuffing pneumonia occurred approximately during the same months as parasitic bronchitis. This is not absolute, since acute fatal cases have been submitted for *post-mortem* examination at all times of the year and one severe outbreak was investigated in late winter.

The connection between this disease and parasitic bronchitis requires further research. That it is not merely a secondary infection is certain since it is often present as a severe or lethal disease in milk fed, housed calves. From our limited experience it appears that when calves suffering from this disease are turned out to grass carrying *Dictyocaulus viviparus* larvae, a very dangerous disease combination results. Typical severe clinical husk with dyspnoea has been produced experimentally by a combination of cuffing pneumonia and parasitic bronchitis, and it was interesting to observe that the calves with the most extensive lesions of cuffing pneumonia were also the most severely affected by lungworms. In these experiments 16 calves were exposed to infection with cuffing pneumonia a week or more before each was infected with 10,000 *Dictyocaulus* larvae. The following table shows the degree of cuffing pneumonia present at autopsy compared with the extent of the parasitic infestation as judged by larval counts during life and worm counts and lesions at autopsy.

Table 1

The degree of infection with lungworms and cuffing pneumonia present at autopsy in 16 calves, each of which was exposed to infection with cuffing pneumonia before being given 10,000 lungworm larvae.

Degree of infection with parasitic bronchitis	Number of animals	Number of these showing cuffing pneumonia	Degree of cuffing
Severe	6	6	Severe
Moderate	2	2	Moderate
Mild	4	2	One severe One mild
Negative	4	2	Mild

The number of calves involved is small but it might indicate that a previous infection with the cuffing pneumonia predisposes to a heavier infestation with lungworms.

The introduction of cuffing pneumonia into a self-contained herd with no history of clinical husk for many years may account for the apparently inexplicable appearance of severe husk in a given year.

* The substance of three papers presented to the Dumfries and Galloway Division, B.V.A., on November 13th, 1952. A detailed report containing a review of the relevant literature is being prepared. This work was carried out with the aid of an A.R.C. grant.

Clinical Signs

Field cases appeared to fall into three fairly well-defined groups ; experimental cases could be similarly classified. As the disease progressed or regressed an animal's condition could be related at different times to different groups but some animals remained only mildly affected throughout the course of the disease.

Group 1 (Mild)

On those farms where the infection was widespread among young calves and adult cows the only abnormality apparent to the farmer might be an occasional cough. An owner sometimes observed that the young calves were not thriving as well as they might.

On clinical examination these animals showed a temperature of 101·5° to 103° F., a pulse rate of 70 to 100 per minute with good volume and elasticity, and a respiratory rate of 25 to 35 per minute. Thoracic auscultation revealed a prolonged and somewhat harsh vesicular inspiration, while good resonance was obtained on percussion. The animal coughed readily when the trachea was pinched. With the techniques employed *D. viviparus* larvae were absent from, or present in small numbers in, the faeces.

Group 2 (Severe)

In most cases the pneumonia was first observed in a group of calves or cows at pasture which the farmer had noticed to be coughing a great deal and to be in poor bodily condition.

These animals showed a temperature about 103° F., a pulse of 90 to 110 per minute with full volume and good elasticity, and a respiratory rate of 35 to 65 per minute. A pronounced bronchial inspiration was heard on auscultation, and this tubular sound extended into expiration as the respiratory rate increased. Apart from an occasional sibilant rhonchus, adventitious sounds were absent. No change in resonance was detectable at this stage. The numbers of *Dictyocaulus* larvae in the faeces varied from 0 to 100 per gramme.

Group 3 (Severe with dyspnoea)

In cases with advanced pulmonary consolidation, the condition of the calf or cow deteriorated steadily until a stage of advanced dyspnoea was reached.

These animals had a characteristic appearance. They stood or lay with their necks extended, gasping for breath and grunting at the end of each expiration. The expiratory rate ranged from 80 to 120 per minute and was sometimes even faster than the pulse rate ; the pulse volume lessened as the dyspnoea increased. The temperature was about 102° to 103° F. Loud, harsh, bronchial breathing terminating in a grunt was heard and sometimes hyper-resonance was obtained on percussion. Where there was widespread consolidation of the diaphragmatic lobes without emphysema there was a decrease in thoracic resonance.

Oxygen therapy produced an immediate improvement in the animal's condition by reducing the respiratory rate to 60 to 80 per minute ; as soon as the oxygen supply was withdrawn the animal again became dyspnoeic.

Many animals which appeared to recover from the milder forms were still recognisably abnormal on examination of the thorax several months later. The respiratory rate frequently remained raised and the bronchial breathing and occasional coughing persisted. Weight gains were small during the course of the illness.

Lesions

The lesions of this disease are of a peculiar type and in a large part explain the clinical syndrome which is usually afebrile, of a non-toxic character, and is associated with respiratory distress.

In typical bacterial pneumonia, the bacteria gain entrance to the alveoli and set up an inflammatory reaction. This causes consolidation of the lung by the obliteration of air space with inflammatory exudate and leads to dyspnoea, fever and toxaemia. The usual acute nature of the disease is in keeping with an acute inflammatory response.

In cuffing pneumonia there appears to be quite a different sequence of events. There is normally only a very small amount of lymphoid tissue present in the bronchial wall of the calf. This is presumably invaded by the infective agent and becomes hyperplastic, forming a ring or cuff around the bronchi. This cuff extends inwards to cause bronchial constriction and outwards to compress the alveoli around the bronchi until a stage is reached where there is total obliteration of the air space of the affected part. This is effected almost exclusively by pressure as at no point does actual invasion of the alveoli by lymphoid cells occur. The development of the lesion is illustrated systematically in Figs. 1 to 4.

Fig. 1.—This shows the formation of a lymphoid germ centre in the septal tissue between two small bronchioles. Note that at this stage there is no compression of bronchi or alveoli and the complete absence of inflammatory cells in bronchial and alveolar lumina.

Fig. 2.—This shows the extension of the lymphoid hyperplasia to form a cuff around the bronchioles. The alveolar air spaces are still patent and there are no inflammatory phenomena.

Fig. 3.—This shows the further extension of the cuff to cause compression collapse of the alveoli which at this stage still show no inflammatory reaction, although the air space is almost wholly obliterated.

Fig. 4.—This shows the final lesion which is tantamount to the formation of lymph nodules around the affected bronchi with complete obliteration of the surrounding alveoli by compression collapse. The bronchial lumina are reduced to slits and now show a secondary mild purulent inflammation.

This last lesion produces a very characteristic naked-eye picture. The affected lobe shows reduction in volume due to collapse and the alveolar tissue is deep red in colour due to the absence of air space and the approximation of the alveolar mural capillaries. Against this background the bronchi, surrounded by their white lymphoid cuffs, stand out clearly and on section the mass of cuffed bronchi " pout " from the surface.

On examining the lungs at autopsy, it often appears that only the anterior lobes and the anterior borders of the diaphragmatic lobes are affected ; but on cutting along the bronchi an area, one lobule wide, is often found extending along almost every bronchus and obliterating about 80 per cent. of the pulmonary air space. There is also very marked hyperplasia of the broncho-mediastinal lymph nodes. In very few cases has abscess formation been associated with this type of pneumonia. Secondary mild purulent bronchitis is quite common in cases of some standing.

It is possible that the specific infective agent may cause death before the cuffing lesion has progressed to the stage at which it causes pulmonary collapse, since two cases which died after a short illness have been studied in which a typical mild lesion was found only after histological examination. However, intercurrent septicaemia could not be excluded in these calves which were both still on a milk diet.

W. F. H. JARRETT, W. I. M. McINTYRE & G. M. URQUHART—RECENT WORK ON HUSK: "CUFFING PNEUMONIA"

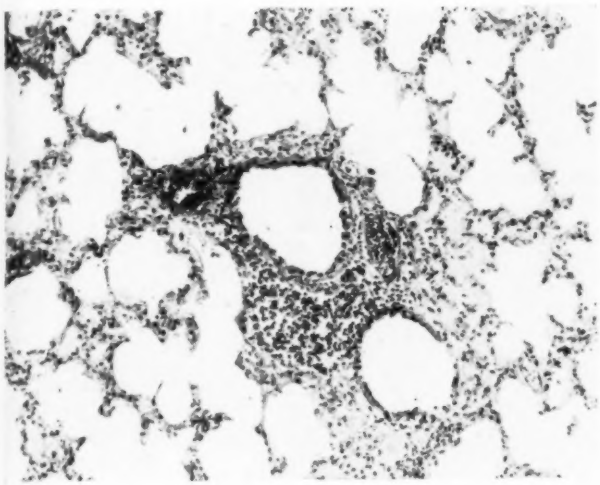

FIG. 1.—Formation of lymphoid germ centre in septal tissue.

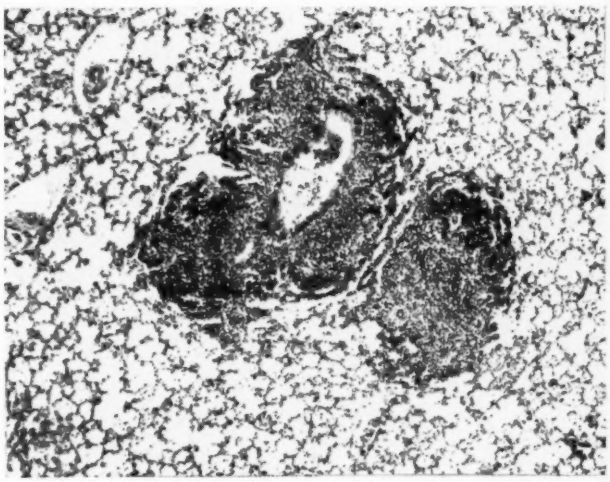

FIG. 2.—Extension of lymphoid hyperplasia, forming cuff round bronchioles.

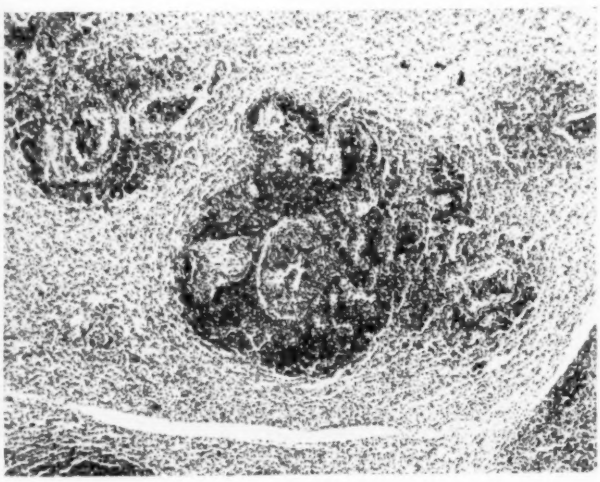

FIG. 3.—Further extension of cuff, causing compression collapse of alveoli.

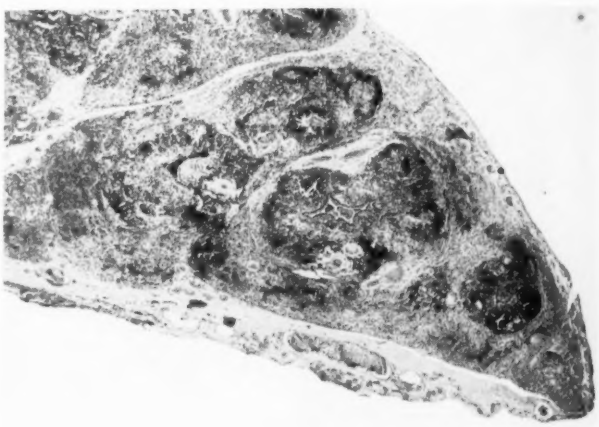

FIG. 4.—The final lesion.

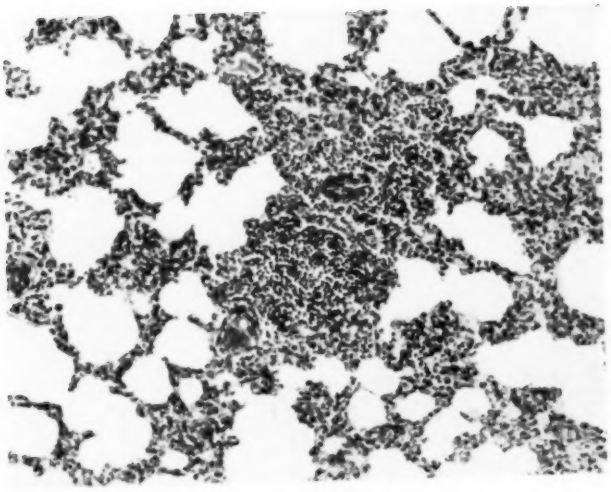

FIG. 5.—Main lesion of guinea-pig pneumonitis.

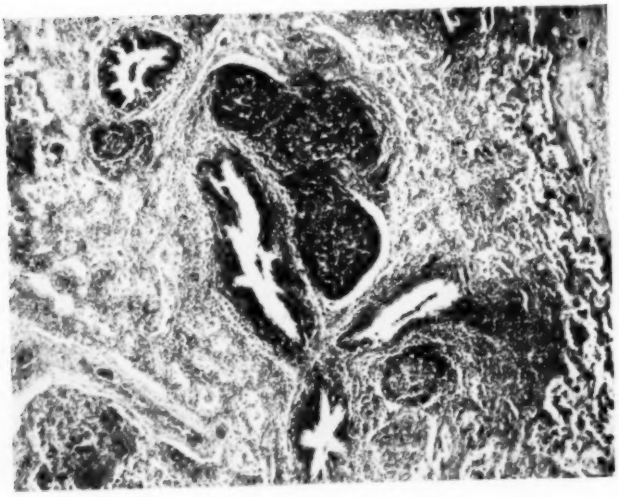

FIG. 6.—Virus pneumonia of pigs.

It is obvious that when the cuffing lesion is affecting the anterior lobes of the lungs and lungworms are present in the posterior bronchi, a stage is reached at which the animal's oxygen intake is severely restricted. We have produced severe clinical husk experimentally in this way.

In some cases of husk, after the greater part of lungworm infestation has been shed, a parasitic lesion, consisting essentially of collapse and fibrosis, remains, involving the posterior parts of the diaphragmatic lobes ; this probably augments the effect of the cuffing lesion in causing a continuation of respiratory symptoms.

Clinically, cases of the type shown in Figs. 3 and 4 show severe dyspnoea and grunting with little evidence of toxaemia. It is in this type of case that marked but temporary alleviation of symptoms can be produced by administering oxygen.

If a severely affected animal be submitted to forced muscular exertion, marked emphysema may be produced. This appears at autopsy as ballooning of the septal tissues of the consolidated parts of the lung by air, some bullae being the size of an orange or even larger. This type of case may succumb to acute heart failure due to a combination of pulmonary collapse and emphysema. The agonal stages may then be complicated by pulmonary oedema. In this way a syndrome similar to fog fever may be produced. (See discussion.)

Transmission

In-contact transmission has already been mentioned (*vide supra*).

The disease has been transmitted by intra-tracheal injections of suspensions of affected lung, to 35 animals. In one such experiment six serial passages were obtained using groups of four to six calves.

The calves employed were usually one to three days old but some were aged two to four months. Most of these were reared in complete isolation.

All clinical stages of the disease, as already described, have been reproduced.

Until recently, passages using filtrates had not been commenced owing to our limited isolation accommodation. Such experiments are now in progress.

Discussion

The causal organism of this disease has not yet been determined but there are some epidemiological and morphological factors which must be considered.

D. viviparus can be excluded as the specific causal agent for several reasons. Cuffing pneumonia occurs naturally, and can be produced experimentally, in calves reared indoors with no access to larvae, and the lesions found in these animals are not those characteristic of parasitic bronchitis. These latter will be described in a future publication.

No constant association of any one bacterium with this disease has yet been found. The characteristic lesion of this disease is hyperplastic rather than necrotic and inflammatory in nature and in this respect does not correspond to most bacterial pneumonias. There are exceptions to this, *e.g.*, proliferative tuberculosis, but unlike such conditions no bacteria can be demonstrated histologically in the lesion.

There is a marked similarity between cuffing pneumonia and certain pneumonias of known virus aetiology such as grey lung virus disease of mice, spontaneous pneumonitis of guinea-pigs, cotton rat virus pneumonia and virus pneumonia of pigs. Fig. 1, which shows early cuffing pneumonia, is almost identical with Fig. 5, which illustrates the main lesion of guinea-pig pneumonitis. A similar comparison can be made between Fig. 3 and Fig. 6, the latter being taken from a case of virus pneumonia of pigs. While no attempt is being made to postulate aetiology on purely morphological grounds, we feel that the comparisons noted above warrant the application of the techniques of virus research to this problem.

The relationship between the epidemiology of this disease and that of parasitic bronchitis is not yet clear. On all the farms from which we have obtained animals for autopsy during outbreaks of husk, cuffing pneumonia has been present. This may prove to have been purely fortuitous. As the figures in Table I show, the experimental calves which developed the highest lungworm larval counts in the faeces were those which had the most widespread and severe cuffing lesions ; in the milder infections, the degree of lungworm infestation also appeared to parallel the degree of cuffing. The number of animals used was small but this experiment may indicate that an infection with this pneumonia predisposes to a heavier infestation with *D. viviparus*.

Up to the present over a thousand examinations of the bovine chest have indicated that clinical examination of an animal is not sufficient to establish a differential diagnosis between cuffing pneumonia alone and a combination of cuffing pneumonia and parasitic bronchitis. If indoor calves, as well as older animals, are affected the presence of cuffing pneumonia may be suspected but autopsy is necessary for confirmation. Where only grazing animals are affected, whether or not their faeces contain demonstrable lungworm larvae, autopsy is required to establish whether both conditions or one only are present.

We have been asked by veterinary surgeons to examine clinically and pathologically several cases of what they considered to be typical fog fever and we are satisfied that a fog fever-like syndrome can be caused by several distinct pathological conditions.

Clinically, the cases studied had in common severe dyspnoea with grunting, hyper-resonance on percussion and emphysematous crackling on auscultation. At autopsy we found four different types of lesion which appeared to have caused the emphysema which gives rise to the striking clinical manifestations. These were (1) chronic pneumonia due to *C. pyogenes* ; (2) parasitic bronchitis ; (3) cuffing pneumonia ; (4) an apparently distinct entity not associated with any of the former.

We suggest that the pathogenesis of this syndrome may be as follows : (1) A condition is established which causes obliteration of a large volume of the pulmonary air space. (2) This leads, especially on exertion, to an increased respiratory rate with hyperventilation of the lung, the full inspiratory effort being directed against a relatively small volume of normal lung. (3) The alveoli or terminal air passages become distended and rupture into the interstitial tissue of the lung, producing emphysematous bullae. These may subsequently rupture into the thoracic cavity. (4) The combination of pulmonary collapse and emphysema causes acute heart failure of varying degree which may be manifested by pulmonary oedema.

It is also possible that in some cases a degree of pulmonary oedema is established, due to anaphylaxis or some other cause, and that this may be the agent responsible for the initial obliteration of the air space which sets off the emphysematous reaction.

Finally, we feel that the recognition of cuffing pneumonia will go a long way towards explaining the death of the many animals which die of husk and yet show few or no lungworms at autopsy. We would be very pleased to examine material from cases in which such doubt exists. Work at present is being directed towards the determination of the causal agent, the way in which it persists from year to year in a herd, and its correlation with parasitic bronchitis.

General Discussion

Mr. MILLER (Lockerbie) said that he knew of farms where annual outbreaks of coughing and sometimes pneumonia occurred. This disease was febrile and he had attributed it to a pasteurella infection and found that pasteurella vaccine was sometimes useful as a prophylactic.

Mr. JARRETT replied that he recognised nine morphological types of pneumonia of calves. One of these types was associated with pasteurella infection. The lesions of the pneumonia described in this paper were histologically characteristic.

Mr. MILLER then asked if secondary invaders were present in this type of pneumonia.

Mr. JARRETT said that although animals with this type of pneumonia were possibly more susceptible to parasitic bronchitis when turned out to pasture, severe secondary bacterial invasion did not in his experience normally occur. As a rule abscesses and necrosis were absent at *post-mortem* examination.

He demonstrated this clearly by exhibiting lungs taken from a calf which had died following experimental infection with cuffing pneumonia.

Mr. MCINTYRE said that the clinical signs and course of typical bacterial pneumonia were different from this cuffing pneumonia. In the former there was a sustained pyrexia over a few days with anorexia and dullness. Marked loss of weight and sinking of the eye occurred. There was a leucocytosis and the animal was toxic. Cuffing pneumonia did not show those features.

Mr. MACALLISTER (Stranraer) asked if there was any similarity between the various virus pneumonias of humans and animals and this pneumonia.

Mr. CAMPBELL (Castle Douglas) asked (1) if calves with this pneumonia were more susceptible to husk, was the reverse also true? (2) What were the characteristics of a virus pneumonia? (3) Was not cellular infiltration round bronchi typical of virus pneumonia as in Q fever?

Mr. URQUHART replied that at present it was unknown if husk predisposed to cuffing pneumonia.

Mr. JARRETT said that with regard to Mr. MacAllister's question and Mr. Campbell's second question, there was no such thing as an absolutely characteristic virus pneumonia. Some types, *e.g.*, human measles and canine hard pad disease, produced pulmonary alveolar epithelialisation with eosinophilic inclusion bodies. A similar type had been observed by him in calves. There was a case for stating that this type of pneumonia was characteristic of some virus diseases.

In grey lung virus disease, cotton rat virus pneumonia, spontaneous guinea-pig pneumonitis and virus pneumonia of pigs, peribronchial lymphoid cuffing was present as the main lesion.

In jaagziekte of sheep, a disease reasonably common in this part of Scotland and which was probably due to a virus, the characteristic lesion was pulmonary adenomatosis.

The feature which all of these conditions had in common was that the infective agent produced hyperplastic changes and not those of necrosis and inflammation. On the other hand, human influenza, a virus disease, might produce a necrotising broncho-pneumonia.

He emphasised that it was very rash to deduce aetiology from morphological changes alone and that at best these changes indicated possible lines of research.

With regard to Q fever, as far as he knew, there were only about three *post-mortem* reports of Q fever in the literature. These showed peribronchial lymphoid cuffing plus a macrophage infiltration of alveolar walls and lumina.

Mr. BELL (Longtown) asked if oxygen had any therapeutic value in this condition and how it was used.

Mr. MCINTYRE replied that he did not think that oxygen therapy was of more than palliative value in cuffing pneumonia in which dyspnoea resulted from widespread consolidation. It might prove to be of considerable value in cases of fog fever in which dyspnoea arose from widespread pulmonary collapse and emphysema. If these animals could be given a sufficient concentration of oxygen to alleviate the dyspnoea, thereby halting the spread of emphysema, they might gain a few hours of life during which some of the air might be reabsorbed and more deaths prevented. Oxygen was administered from a cylinder via a canine anaesthetic mask.

CLINICAL COMMUNICATIONS

ERGOT POISONING IN YOUNG CATTLE

I.—BY ERIC B. JONES, B.V.SC., M.R.C.V.S.,
CAERNARVON

On September 15th, 1952, a call was received from a client to examine some "lame" heifers. On arrival, three cross Friesian heifers, aged approximately 12 months, were presented for examination.

General Symptoms.—Condition fair, tucked-up abdomen, running eyes, a dullness that is associated with pain and disinclination to move. Respiration, normal; pulse, no discernible acceleration or alteration in character was noted. Temperatures varied from 102° to 104° F.

Local Symptoms.—Regional lymphatic glands were swollen. The region from the coronet to approximately the mid-cannon in each case was swollen and sharply demarcated from the normal. This area was painful on handling but not hot to the touch; it was quite firm and gave no indication of pitting. The skin of the area showed evidence of a wet eczema with the hairs in little matted tufts. No abnormal odour was detected. There were no foot lesions, though the hooves were filthy, due to accumulation of dirty bedding and wetness, despite the fact that the day of visit was a dry one and the dirty bedding was dry. This wetness was regarded as being due to the weeping of the serous discharge from the skin on to the coronet and hoof. It should be noted here that the animal had been indoors only for a few hours pending our arrival.

Of the three animals affected one, A, showed these local lesions in all four legs, B in both hind legs, C in the right hind leg only.

Inspection of the other animals of the bunch revealed one to be lame from an old, untreated foul lesion, and one from a laceration of the fetlock. No other foot or leg lesions were noted. On the whole, their general condition could be described as fair.

History.—All 12 animals in the bunch had received anthelmintic treatment and had been moved from pasture to pasture. Since hay harvest—approximately mid-July—they, with 10 in-calf cows and heifers, had been grazing on aftermath of second- and third-year leys, extending to about 15 acres in addition to a marsh of 5 acres. The symptoms described above were not noted until two days before our arrival, as the inspection by the bailiff had been cursory due to the pressure of the corn harvest, so that it was not possible to state how long the symptoms had been present. It is significant, however, that the visit was made to examine lame animals, which lameness or disinclination to move was, possibly, noticed only two days prior to our visit.

Diagnosis.—A definite diagnosis was not established at this visit. The condition markedly resembled cellulitis of the horse and had been previously observed by me in cattle affecting one leg and due to trauma. It was believed that trauma had facilitated the entrance of some infection which had been encountered in the marsh grazing causing the local symptoms, which were possibly extenuated by the poor condition manifest.

Treatment.—In an effort to control infection, 70 c.c. of solupyridine was administered subcutaneously, followed by trinamide 5 grammes *per os*, succeeded by half this dose *b.i.d.* The swollen areas were to be bathed with warm soapy water, dried, and then dressed liberally with propamidine cream (May & Baker, Ltd.) twice daily. Good clean bedding was to be provided, with a liberal allocation of good hay and calf nuts. The affected animals were to be housed and the remainder removed to fresh pastures.

Prognosis.—On the whole, favourable, although the cellulitis was expected to suppurate. It was, of course, graver with the animal affected in all four legs.

A re-visit was made on September 18th, by which time the writer had pondered over the condition. The resemblance to cellulitis in the horse and its association with filth was the only definite pointer in the diagnosis. One had also recalled reading of ergot poisoning and this now became a possible explanation of the condition observed.

Examination of animals B and C revealed them to be bright, with excellent appetites, the temperature recorded being 102° F. and no change being noted in their local symptoms. There was no indication of pointing.

A, the worst affected animal, however, showed no improvement. Recumbency was continuous with poor appetite. Marked local changes were noted, swelling of the legs was less marked, but the skin in the region of the fetlock in both hind legs was sloughing, a flap of about 1½ inches wide hanging down. This showed ragged edges of necrosed tissue, which was dry and crumbling. The underlying ulcer was covered with necrotic tissue. Similarly, the hooves were dirty in spite of the good and plentiful clean bedding and the cleansing which had been carried out. The feet of the other two animals also were dirty and all three animals showed a deformity of the hooves which, in the case of the hind legs of animal A, appeared to be loose and would in due course slough off.

These developments were unexpected and did not conform to a clinical picture of cellulitis, which tentative diagnosis now seemed unjustified. They suggested necrosis and sloughing—regarded as being a characteristic of ergot poisoning. Examination of the pasture grazed since hay harvest showed that keep was still available though not plentiful. The few remaining rye-grass stems showed the sclerotia of ergot in ones, twos, or even threes. These affected rye-grasses were evident throughout the grazing and quite probably had been eaten.

A diagnosis of ergot poisoning was now made.

Prognosis and Treatment.—Prognosis was now extremely guarded. In fact, in the case of animal A, it was probable that more skin sloughs would occur and that the hooves also would slough with subsequent toxaemia from secondary infection; in addition, that the local lesion would become more painful now that no more ergot was eaten to cause arteriole constriction, with the consequent increase of pain.

The local treatment previously adopted was repeated. General treatment required some medicament to relieve the intense and continuous vascular constriction produced by the active principles of ergot, which constriction probably was present throughout the body. Medication on these lines appears improbable, as the active principles in repeated doses seem to "paralyse the motor sympathetic endings or directly to depress the muscles" (Dilling).

A third visit on September 28th, 1952, showed a definite improvement in animals B and C. They were lively, with excellent appetites. The swelling of the legs had subsided, the limbs showing no undue tenderness on palpation, and no evidence of sloughing of either skin or hooves. The skin, however, showed marked flaking or dandruff, which was regarded as being exfoliation due to necrosis. These animals were turned out to fresh pasture.

Animal A, however, was in a shocking state, with extensive sloughing of skin on all four legs, complete avulsion of both hooves on the hind legs and impending avulsion of those of the forelegs. The animal was continuously recumbent on its side but could walk about in spite of the loss of hind hooves. Destruction was advised and arrangements were made for a *post-mortem* examination.

Post-mortem Examination.—Unfortunately, due to a misunderstanding, only the legs were salvaged from the carcase. All four were forwarded to the Pathology Department of the Liverpool Veterinary Faculty, where they were kindly photographed and examined by H. P. Harding, Esq., M.R.C.V.S., who reports as follows:—

"Two forelimbs and two hind limbs severed at the proximal ends of the metacarpus and metatarsus respectively showed extensive necrosis and ulceration of the skin. The ulceration was well defined but patchy in distribution and in places the sloughing was incomplete. The lesions were not localised to any particular areas but were most prominent above and around the fetlock joints and, in the case of the hind legs, extended to the coronary band. Deep dissection and histological examinations were not made."

Pastern and fetlock area. Note the ulcerated areas and absence of hooves due to sloughing.

Subsequent History.—The two animals remaining affected were seen about a month later. They showed no swelling of the legs or sloughing. The legs and hooves were quite shapely, although an impression of thin legs was given. The other

nine animals did not develop any observed local lesions but were still lacking in girth and the gloss associated with good doing.

Discussion

Twenty-two animals grazed a 20-acre area of aftermath for a period of six weeks. Contamination of the pasture with ergot was heavy, so that considerable amounts of sclerotia must have been ingested continuously. It is regretted that no estimate has been made of the probable weight of sclerotia or of its active principles.

A true clinical picture of classical ergot poisoning in cattle was observed, suggesting three phases, emergent from one to another.

(1) A phase of indefinite but slow maturing of the affected animals, having eliminated other possible causes of this condition, such as low level of nutrition, presence of parasites, etc.

(2) A phase of well-defined swelling of the extremities, dry necrosis with absence of definite lameness or continuous recumbency but manifesting an ill-defined malaise associated with a dull type of pain, as described by other authors, also was observed.

(3) A phase of sloughing of the well-defined necrosed areas, complicated by contamination.

It is suggested that the initial phase affected the younger animals in contrast to the excellent condition of the down calvers.

It was noted that the gross symptoms of necrosis observed cleared up quickly when animals were removed from the contaminated pastures. Emphasis is, however, laid on the fact that, of the remaining 11 yearlings examined on November 3rd, 1952, all showed a poor general condition. It is a matter for speculation what damage (which may be of a permanent nature) has been done to the arterioles of the splanchnic area, though no such damage could be discerned by clinical diagnosis at the time of illness.

* * * * *

ERGOT POISONING IN YOUNG CATTLE

II.—By C. M. Edwards, B.V.Sc., M.R.C.V.S.,
Veterinary Laboratory, Ministry of Agriculture,
Bangor, Caerns

Conditions in cattle thought to be associated with the infestation of pasture grasses with the sclerotia of ergot (*Claviceps purpurea*) have been reported during recent years (Jones, 1947; Flodin, 1947; Hughes, 1947; Barron & Kidd, 1947). Barron & Kidd were more certain of their diagnosis since the pastures were found to be actually infested with ergot. Hughes (1952) (personal communication) was, in a subsequent outbreak, able to connect the disease which he found with heavy ergot infestation of the pasture. Menzies (1952) (personal communication) encountered a case in cattle which showed typical gangrenous lesions of the hind legs but at the time of inspection of the associated pasture no evidence of infestation could be found.

The pastures concerned with this outbreak were found to be very heavily infested when inspected on September 29th. On October 1st the same conditions obtained and remained similar on October 6th. By October 8th, however, sclerotia could be found only after careful search, and had indeed completely disappeared from fields where they were abundant even on October 6th. This could be accounted for by the sudden occurrence of frost (the first of the season) on the night of October 6th, followed by heavy rain, hail and strong winds on October 7th. In view of these observations, failure of some observers to discover ergot in suspected outbreaks might be explained. Grasses in every field on the holding were affected with the fungus. The grazing varied from old permanent swards of one-, two- and three-year-old leys, consisting chiefly of clover/perennial rye-grass mixtures. The disease actually appeared in young cattle which were on one of these leys, but some affected animals were also on old pasture. Perennial rye-grass was the predominant host and in some of the new pastures it was difficult to find an inflorescence not affected. On the old pasture a variety of other grasses were also infested, namely, cocksfoot, timothy, crested dogstail, tall oat grass and Yorkshire fog (Fig. 1). These indigenous grasses were also severely affected alongside footpaths which intersected the farm and in particular on a disused grass-covered drive to the windward side of the fields. These were probable reservoirs of infection which would account for the occurrence of ergot over the whole farm. The presence of ergot in such habitats and on rough pasture is not uncommon (Percival, 1949). More regular inspection of such spots might, therefore, result in the more frequent discovery of the fungus in suspected cases. A factor in promoting such a *heavy* incidence, however, was the undergrazing of the pastures during the summer. Many sclerotia were thus allowed to reach maturity whereas adequate grazing during the flowering period would have reduced the available inflorescences which could become hosts for the ascospores of the fungus. This would automatically diminish the number of sclerotia which would reach maturity in the ripening ovaries of the grasses in the autumn.

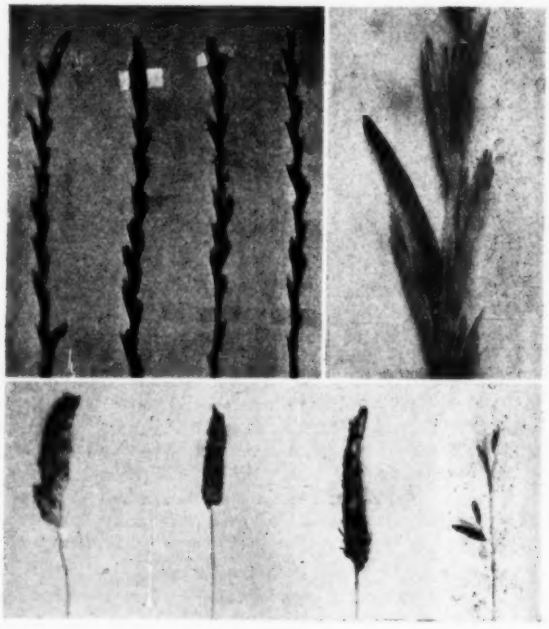

Fig. 1

In this outbreak trouble was confined to a bunch of yearling heifers which were grazing together with adult cattle. No symptoms of illness were noted in the latter although there had been one abortion. There was, however, insufficient evidence to connect this with ergotism. Symptoms in the six affected young cattle were characteristic of what has been described elsewhere, *i.e.*, necrosis and gangrene of the extremi-

ties of the limbs, particularly the hind legs, with secondary infection in some. Invariably one of the hind legs was the first to become affected. There was an indented line as if a rabbit snare had become tightly lodged round the limb slightly above the level of the fetlock (Fig. 2). Below this line, the extremity when seen in the later stages was swollen, but cold, and necrotic skin was separating from the underlying tissue.

Fig. 2.—Pastern and fetlock area: lateral view.

There was little sign of pain at this stage and in the one animal from which the digits separated later, there was comparatively little discomfort shown on the previous day. There were already indications that separation was likely in view of lateral displacement of the limb below the fetlock and misalignment of the digits. Two of the cattle did not exhibit the typical gangrenous lesion in the legs but became tucked up as if, in this case, the toxic effect was most marked in causing constriction of the splanchnic arterioles. In all affected animals there was general malaise with depression, rapid loss of condition and uncertain, ataxic movements. Ergot is known to contain at least five alkaloids and the ergotoxine fraction is further subdivided into three ("Research To-day," U.S.A.). These are very powerful pharmacologically, but when taken by mouth the actions are due mainly to ergotoxine, ergometrine and ergotamine. Of these the main toxic fraction is ergotoxine, which causes constriction of the arterioles in the splanchnic area as well as in the limbs (Dilling, 1944). Cunningham (1949) records that 100 g. of ergot sclerotia had to be fed daily for 10 days to produce characteristic lameness and necrosis of the limb in adult cattle. It was estimated that in view of the heavy infestation of the pasture and the probable smaller quantity necessary to produce symptoms in younger cattle, the required quantity of ergot would have been ingested prior to the appearance of symptoms. Why an adequate amount was not apparently ingested by the adult cattle which were co-grazing with the yearlings is not fully understood, since seldom could there be an opportunity to ingest more under natural conditions.

Control Measures.—In view of the sudden disappearance of the ergot sclerotia from the pastures, it was considered safe to continue their grazing with adult stock. Adequate grazing during the summer months to allow few or no flowering heads of grasses to develop was considered an essential measure in future seasons. Periodic cutting of herbage bordering the footpaths and covering the old drive would be necessary to eliminate the reservoir of natural infection.

Summary

1. An outbreak of ergot poisoning in yearling cattle showing symptoms of gangrene of the extremities, chronic wasting and abdominal contraction, is described.

2. The infestation of the pastures with the fungus was exceptionally severe but after frost and heavy storms the disappearance of sclerotia was rapid. Rye-grass and five other species of grasses were found affected. Indigenous sites probably acted as reservoirs of infestation.

3. Control measures by adequate management of pasture and indigenous sites are advised.

Acknowledgments.—The author is grateful to all those who showed an interest in the outbreak and contributed useful information. Also to Mr. D. Wyn Parry, M.Sc., and Mr. H. T. Davies, Senior Technician, both of the U.C.N.W. for preparing the photographs.

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VIRUS RIDDING AUSTRALIA OF RABBITS

Mr. Casey, Minister for External Affairs, reviewing the inroads made on the rabbit pest in Australia by the myxomatosis virus, said that for the third successive year there had been seasonal conditions favourable to the spread of the virus through insect carriers. The disease had not only combated the natural increase of rabbits in the areas most infected but had spread from them to districts not previously affected.

In many parts of Victoria and in large areas of New South Wales, South Australia, and southern Queensland, a 90 per cent. reduction of the rabbit population had been reported. In the Cunnamulla district of Queensland thousands of square miles of light sand country that had been kept bare by rabbits was now covered with new growths of grass and herbage ideal for stock feeding. Most of this country had been useless for sheep raising since the 1880s, when rabbits entered it from South Australia.

In many areas, the Minister said, graziers and farmers reported a remarkable increase in the carrying capacity of their pastures because of the infection of the rabbits by myxomatosis. There were other areas in all States where the virus had not yet had any appreciable effect. If the gains made in the past three years were maintained, Australia's stock-carrying capacity would be increased by tens of millions, and the value of the wool clip by many million pounds.

Mr. Casey added a warning, however, that unless landholders took vigorous action to maintain what had been won the opportunity to free vast areas of valuable country from the rabbits would be lost.

ABSTRACTS

Bovine Brucellosis: A Study of "Questionable" Animals*

What to do with animals reported as "Questionable" (doubtful in this country) to the blood test for brucella agglutinins is frequently a source of concern. The subsequent serum titres of 828 cows, six months and one year after their first "questionable" reaction, was studied in relation to the status of the herd at the time of the initial test. Dividing the herds arbitrarily into three categories—no positive reactors, less than 10 per cent. and more than 10 per cent. positive reactors—the authors suggest that the results indicate that the number of "questionable" cows which return to negative varies inversely with the extent of the herd infection. A large number of the animals which were in the lightly infected herds were not included, however, in the retest carried out at 12 months.

J. S. P.

* **Bovine Brucellosis: A Study of "Questionable" Animals.** Moore, T., & Mitchell, C. (1952). *Canad. J. comp. Med.* **16.** 250-253.

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Treatment of Paradistemper*

Chloromycetin proved effective in cases diagnosed as paradistemper (hard pad) provided treatment was begun early. Dosage for a small dog (20 lb.) was 500 mg. orally followed by 250 mg. *t.i.d.* for at least four days. (Larger dogs were given 750 mg., then 500 mg. *t.i.d.*) The temperature fell rapidly to normal and relapses were uncommon. Chloromycetin eye ointment was of use when keratitis occurred.

Nervous sequelae which failed to respond to chloromycetin were treated with the anticonvulsant drug Mysolin (I.C.I.) with apparent success. Other complications which occasionally developed in spite of chloromycetin were pneumonia, and in one dog a persistent nasal and conjunctival catarrh.

J. F. S.

* **Some Observations on the Use of Chloromycetin in Paradistemper.** Lambert, N. H. (1952). *Irish Vet. J.* **6.** 530-533.

GOAT-KEEPERS' REACTION TO END OF FOODSTUFFS RATIONING

Commenting on the pending discontinuance of the rationing of feeding-stuffs, the *British Goat Society's Journal* says that, "though, in effect, this will mean that we will in future be rationed by purse rather than by Government Order, it will come as a relief to us all to be able to buy at our own discretion at last. High prices for concentrate foods have already made dairy farmers turn more and more to home produced bulk foods (grass, hay, silage, kale, lucerne and other forage crops), for moderate yielding cows, and goat-keepers will undoubtedly have to follow the same course. The point which we must stress, and one which club secretaries are continually having to explain to novices and sometimes even to goat-keepers of several years' experience, is the large weight of bulky food required to maintain a goat in health and production. The goat being a ruminant has a digestion designed for extracting nourishment from bulky material of comparatively low food value. For most of the year she can live and produce a moderate quantity of milk on hay and greenstuff alone, but this can only be managed if she is getting a sufficient amount of good quality forage."

REPORT

[East African Veterinary Research Organisation. Annual Report for 1951.]

This report records the activities, during 1951, of the newly established Veterinary Research Organisation and as a lucid account of the work accomplished it is a valuable publication. It also gives a clear indication of the future worth of this organisation in the solution of the many disease problems which are directly preventing the full development of the livestock industry in East African Colonial territories. Much of the work, however, will benefit equally other territories of Africa.

The offices of the newly established Inter-African Bureau of Epizootic Diseases are also situated at Muguga, the Headquarters of the research organisation, with Mr. W. G. Beaton, late Director of Veterinary Services, Nigeria, as its first director. This bureau is an international information centre on the technical and economic aspects of the main infectious and contagious diseases of livestock in Africa. It will collect and distribute information on outbreaks of disease, on control policy and on research. The timely distribution of this information to all participating countries will be of immense practical help to field and research workers alike.

Dr. H. R. Binns, O.B.E., M.A., B.SC., M.R.C.V.S., is the Director of the research organisation and he has a staff of six research officers. The work undertaken during the year covers research on tick-borne diseases, rinderpest, helminthiasis, trypanosomiasis and the drug antrycide, the incidence of bovine tuberculosis in Tanganyika and on animal nutrition. It is impossible in this short review to deal adequately with all the work which has been done and only a brief account of some of the results achieved can be given.

Tick-borne Diseases.—Dr. S. F. Barnett, S.V.R.O., continued his study of East Coast fever. Early in the year, however, he was awarded a fellowship for a year's research and study in the U.S.A. and he left for that assignment in September. An extensive programme of study in protozoal diseases has been mapped out for him. Miss J. B. Walker, Research Officer, has continued the studies on ticks, which will form an integral part of the research on tick-borne diseases to be done at Muguga.

Rinderpest Research.—During the year Mr. J. G. Brotherston, Senior Scientific Officer, remained in very close contact with the production of lapinised rinderpest virus vaccine and Kabete attenuated goat virus vaccine (K.A.G.), both of which he had previously prepared. These biologicals are now prepared by Mr. G. R. Scott and Mr. M. L. Burdin, of the Kenya Veterinary Department.

During 1950 and 1951 lapinised virus vaccine was issued from Kabete on a large scale and employed extensively in routine prophylactic immunisation and to combat outbreaks of rinderpest. In Kenya the vaccine is used only in pure-bred and grade cattle but in Tanganyika, Uganda and the Sudan it is used to immunise indigenous cattle. The use of the vaccine in territories where rapid transport is often a problem required that the viability of the vaccine under varying climatic conditions should be investigated. The results of the investigations carried out showed that dried vaccine exposed to 37° C. for 48 hours protected cattle at a dose of 0·002 g., but the same dose, after exposure for 60 to 96 hours, failed to protect cattle regularly when challenged with virulent virus 10 to 14 days later. When exposed to temperatures varying from 18° to 22° C. for 40 days the vaccine protected cattle, but not after 60 days' exposure. Vaccine reconstituted to 10^{-3} in saline and exposed

to 37° C. for one and a half hours immunised cattle but not after exposure at this temperature for two hours. When similarly reconstituted and exposed to ambient temperatures varying between 20° and 27° C. for six hours the vaccine protected, but it did not protect after exposure for 12 hours at those temperatures.

Helminthiasis Research.—Dr. J. A. Dinnick, Research Officer, assisted by Mrs. Dinnick, continued his research into East African helminth problems, more particularly the systematics and life-histories of paramphistomes of domestic ruminants and the development and bionomics of the larvae of *Haemonchus contortus* on local pasture. As an indication of the longevity of snails and the duration of their infection with the larval stages of a paramphistome it is quoted that a few experimentally infected snails which survived for long periods in the laboratory shed cercariae from the 50th until the 390th, 892nd, 431st and 504th days respectively after exposure to miracidia. These observations give an indication of the long period during which pasture might remain infective after the removal of ruminants carrying stomach flukes. Studies of the development and survival of the larvae of *H. contortus* under natural conditions were continued. This later work confirms the previous observations that the most favourable season for larval development is that of the long rains. The high temperatures and long cloudy periods create exceptionally favourable conditions for both the development and the survival of larvae. Faeces in the shade yielded massive numbers of infective larvae in 12 to 16 days. These studies will serve to indicate the most effective timing of anthelmintic treatment and also the best pasture management to reduce helminth infection in East Africa.

Research on Trypanosomiasis and the Drug Antrycide.—Mr. R. N. Fiennes, S.V.R.O., continued his research on these subjects and he has submitted a final report to the Secretary of State for the Colonies. It is difficult to condense his final conclusions but the following facts are selected as being of particular interest. It has not been proved that antrycide can give a durable and sterile prophylaxis against cattle trypanosomiasis but its improper use can set up a condition where drug-fast trypanosomes may become dominant in the tsetse fly population and this state of affairs may last for at least seven months. Trypanosomes fast to antrycide may also be fast to dimidium bromide. A cryptic form of trypanosomiasis exists in cattle accompanied by anaemia and tissue changes. Parasites are not detectable in blood examinations. Antrycide sulphate gave disappointing results in chronic mixed infections.

The drug is not an infallible cure of trypanosomiasis at all stages of the disease and under all conditions. When given at monthly and two-monthly intervals, it protected cattle exposed to *G. austeni*, but when given at longer intervals it did not. Despite the apparently normal health of the protected cattle Mr. Fiennes deduces evidence of the presence of a cryptic infection of trypanosomiasis in these animals.

Tuberculosis Survey and Investigations in Tanganyika.—Mr. A. E. G. Markham, V.R.O., continued the tuberculosis survey of the Southern Highlands Province of Tanganyika. The single intradermal comparative tuberculin test was used and a total of 39,607 cattle were dealt with. The rate of infection varied from district to district and lay between 2 and 17 per cent. Visible manifestations of the disease were found only on *post-mortem* examination. There were no discernible clinical signs. This is characteristic of the disease among indigenous cattle in other parts of Africa. The ages of greatest incidence were between three and four years of age and over four. Air-borne transmission is considered to be the normal means of infection. The disease has so far never been detected in game.

Despite the difficulties imposed by the mobile nature of the unit, Mr. Markham was able to make the following observations : One cow injected intravenously with 0·0005 g. of a typed bovine strain died 32 days later, showing miliary tuberculosis. Three cattle were dosed with a suspension of 0·5 g. of culture. One failed to react and the two others reacted to mammalian tuberculin one month afterwards. Two bullocks received a suspension of 0·5 g. of culture by nasal spray. One failed to react and the other reacted to tuberculin in one month. When slaughtered at two months it showed tuberculous lesions in the mediastinal gland and lung.

Research in Animal Nutrition.—Mr. J. R. Todd continued his research on various nutrition problems. Using the grass *Bothriochloa insculpta*, he studied the seasonal variation in its nutritive value. Grass cut at the end of the dry season had a low nutritive value, whereas the new growth at the beginning of the rains had a high protein content (18 to 20 per cent.) and high digestibility. The calcium content of the grass falls with the onset of the rains at the same time as the phosphorus content increases. No symptoms suggestive of aphosphorosis in African cattle in Kenya were observed.

W. W. H.

QUESTIONS IN PARLIAMENT

Fowl Pest

Mr. Bossom (February 23rd) asked the Minister of Agriculture what further precautions are being taken this year for preventing fowl pest developing again.

Sir T. Dugdale: The main defence against the spread of the disease continues to be the prompt reporting of suspected cases so that infection can be rapidly eliminated by the slaughter of diseased and suspected birds. The vital importance of this and of the need for strict compliance with my Department's Regulations restricting movements of poultry has been emphasised in recent publicity, and local authorities have been asked to do all they can to see that these rules are scrupulously observed.

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Livestock Worrying

Mr. Bossom (February 23rd) asked the Secretary of State for the Home Department in view of the serious condition which continues to exist due to the failure to control dogs and prevent them worrying sheep, cows and pigs, if he will now deal with the matter as the existing Regulations are not sufficient to give satisfactory results.

Sir T. Dugdale: I have been asked to reply.

As I stated in reply to my hon. Friend the Member for Huntingdon (Mr. Renton) on December 11th there is, at present, no prospect of the Government being able to introduce legislation on this subject. I will, however, study sympathetically the provisions of the Dogs (Protection of Livestock) Bill, introduced by my hon. Friend the Member for Pavilion, Brighton (Mr. Teeling), which is down for Second Reading on March 13th.

Statutory measures can in any case never provide a complete solution to this problem, and much depends on the recognition by dog owners of the importance of keeping their dogs under control when near livestock.

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Cattle, Stoke-on-Trent (Fluorine Poisoning)

Mr. Ellis Smith (February 24th) asked the Minister of Agriculture to make a statement on the fluorine poisoning of cattle on the farms in and around Stoke-on-Trent, and what he estimates is the annual loss of cattle from this cause.

Mr. Nugent: Only one case of fluorine poisoning of cattle around Stoke-on-Trent has been reported to my right hon. Friend's Department, where the farmer has lost four cattle in the last year.

Ox Carcases (Offal): "A Typical Beast"

Mr. Peter Freeman (February 23rd) asked the Minister of Food what is the average weight and cost of an ox; how much it costs to slaughter, skin and prepare for consumption; what is the average weight of the entrails, offals, and of each item diseased or discarded as unfit for human consumption; what is the weight of the blood drained away; and what is the weight of the bones and other inedible parts of the corpse and the average cost per pound of the edible residue.

Dr. Hill: The following is the information in respect of a typical beast:

Cost of good quality ox of 10 cwt. live weight, say	£65 0s. 0d.
Ministry cost up to and including slaughtering, and dressing	£2 1s. 0d.
Weight of edible offal including tripe and fat	About 160 lb.
Weight of hide and horn	About 80 lb.
Weight of blood	About 40 lb.
Weight of gut, stomach contents and other inedible materials	About 200 lb.
Weight of dressed carcase, of which 18 per cent. to 22 per cent. would be bone	About 630 lb.
Wholesale price (in sides) to the butcher	1s. 9½d. per lb.

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Flour "Improvers"

Mr. Beresford Craddock (February 23rd) asked the Minister of Food what further details he can give of the investigations into bread improvers which are now in progress.

Major Lloyd George: The investigations referred to, which are being undertaken by the Ministry of Health, the Medical Research Council and the Research Associations of the milling and baking industries in association with my Department, are designed to assess the relative suitability of various bread improvers, including agene, chlorine dioxide (which is widely used in the United States), vitamin C (ascorbic acid) and a recently developed aeration process in which improvement is effected by high speed mixing. They comprise studies of any chemical changes produced in the flour constituents, the effects of feeding the treated flours on the health and growth rates of experimental animals, and assessments of the quality and acceptability to the consumer of breads made from the treated flours. The work is being pushed on with all possible speed, but the problems involved are complex and if they are to be adequately examined a quick answer cannot be anticipated.

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Horses (Transit from Ireland)

Sir T. Moore (February 26th) asked the Minister of Agriculture whether he is in a position to publish the Order regulating the import of horses and donkeys into this country from Ireland.

Sir T. Dugdale: I assume that my hon. and gallant Friend is referring to the Horses (Sea Transport) Order, 1952, which is designed to safeguard horses and donkeys against unnecessary suffering while being carried by sea to or from Great Britain. This Order was made and published last July.

Sir T. Moore: Can my right hon. Friend say whether the Order is working entirely satisfactorily?

Sir T. Dugdale: I have had no complaints about its working.

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Rabbit Traps

Sir T. Moore (February 26th) asked the Minister of Agriculture what progress has been made with his investigations and trials to find a more humane rabbit trap than the present gin trap.

Sir T. Dugdale: The Imbra rabbit trap has shown that it will catch and kill rabbits humanely, and supplies have been ordered from the manufacturers for use by county agricultural executive committees under working conditions. Manufacturing problems have been holding up supply, but deliveries should be starting within the next few days.

Sir T. Moore: While warmly welcoming the reply of my right hon. Friend, may I ask if he can say when these wretched instruments, gin traps, are to be abolished?

Sir T. Dugdale: I cannot at this stage, because we must have comprehensive trials of the new Imbra trap.

Mr. Philips Price: Will the right hon. Gentleman try to make this new trap better known by the public? Very little is known about it now.

Sir T. Dugdale: The trouble has been the manufacturing problems. It is only just now that they have been cleared. An initial order for about 5,000 was placed by my Department in September, 1952, deliveries are now expected to start this week, and this initial order should be completed in the next fortnight.

Mr. Chapman: If this trap is a success, will the right hon. Gentleman give an assurance that there will be no delay in prohibiting by law the gin trap?

Sir T. Dugdale: I do not think that I can go further now than my answer to the Question.

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Children (Cruelty to Animals)

Mr. Chapman (February 26th) asked the Secretary of State for the Home Department whether his attention has been drawn to the increase during 1952 in convictions of young people for wilful cruelty to animals; and what steps he proposes to take to help reduce the figures.

Sir D. Maxwell Fyfe: Official figures of the number of children and young persons found guilty of cruelty to animals during 1952 are not yet available.

Mr. Chapman: Is the Secretary of State not aware that unofficial calculations show that the figures may have gone up something like 66⅔ per cent. or 100 per cent.? In those circumstances, would he not, for example, consult the Minister of Education so that in schools there should be a little more attention to teaching children some elements of care for and understanding of animals, so that we should not have to suffer this horrible blight on the nation?

Sir D. Maxwell Fyfe: I am very willing to have the consultations, and if the hon. Gentleman will refer me to the basis of his figures I should be greatly obliged.

Mr. Turner-Samuels: Would the right hon. and learned Gentleman say that, whatever the figure is, steps are being taken to reduce it?

Sir D. Maxwell Fyfe: I promised to take the course which the hon. Gentleman the Member for Northfield (Mr. Chapman) suggested. I shall certainly do it with every good will.

NOTES AND NEWS

Diary of Events

March 11th.—Meeting of the West of Scotland Division, B.V.A., at Glasgow (North British Station Hotel), 2.30 p.m.

March 18th.—Meeting of the Editorial Executive, B.V.A., 2.30 p.m. (*Members are asked to note change of date from that (March 11th) announced last week and from usual second to third Wednesday in the month*).

March 18th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at 1, Wimpole Street, W.1, 5 p.m.

March 19th.—Meeting of the Herts & Beds Division, B.V.A., at Luton (The George Hotel), 7.30 p.m.

March 19th.—V.V.B.F. (Northern Area): Dinner-Dance at the Northern Hotel, Aberdeen, 7.30 p.m.

March 19th.—Annual Dinner and Dance of the East Midlands Division, B.V.A., at Nottingham (The George Hotel). Reception 7 p.m.

March 20th.—Annual Dinner and Dance of the Yorkshire Division, B.V.A., at Bramhope, Leeds (Parkway Hotel).

March 25th.—Meeting of the Supplementary Register Division, B.V.A., at the Connaught Rooms, Great Queen Street, Kingsway, W.C.2, 2 p.m.

March 26th.—Sixty-ninth Annual General Meeting and the Annual Luncheon of the Western Counties Division, B.V.A., at Exeter (The Imperial Hotel). Proceedings commence 11.30 a.m.

March 27th.—Meeting of the Lincolnshire and District Division, B.V.A., at Grantham (The George Hotel), 2.15 p.m.

March 27th.—Meeting of the North Wales Division, B.V.A., at Ruthin (Council Chamber), 2 p.m.

April 1st.—The Association of Veterinary Teachers and Research Workers: Joint meeting with the Northern Region, at the University of Liverpool Veterinary Field Station, Leahurst, Windle Hill, Neston, Wirral, Cheshire. Business, 10 a.m.; Symposium on "Skin Diseases," 11 a.m.

April 25th.—30th Annual General Meeting of the Association of State Veterinary Officers, in the Auditorium of the Wellcome Foundation, 183-193, Euston Road, N.W.1, 2 p.m.

Sept. 6th and 12th.—Seventy-first Annual General Meeting and Congress of the British Veterinary Association, at Aberdeen.

B.V.A. Committee and Council Meetings in Edinburgh

At the Royal (Dick) School of Veterinary Studies.

Monday, April 20th.—11 a.m. Organising Committee.
2 p.m. Parliamentary and Public Relations Committee.
3.30 p.m. Home Appointments Committee.

Tuesday, April 21st.—10 a.m. Veterinary State Medicine Committee.
12 noon Finance Sub-committee.
2.15 p.m. General Purposes and Finance Committee.

Wednesday, April 22nd.—11 a.m. Council meeting.

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B.V.A. Congress in Aberdeen September 6th to 12th, 1953

Preliminary information regarding the Congress itself will be published in next week's issue, but meantime, members are asked to note the following:—

The Braemar Games are to be held on Thursday, September 3rd, *i.e.*, in the week preceding the Annual Congress. As it is believed that many members of the B.V.A. will wish to include this event in their visit to the north, the local members of the Congress Provisional Committee are arranging an organised excursion to the Braemar Games from Aberdeen. Those who would like to go should communicate with Mr. P. L. Shanks, Mill of Craibstone, Bucksburn, Aberdeenshire.

It is imperative that all applications for grand-stand and ring-side seats should be made before March 31st next. The prices are as follows:—

Entrance and grand-stand seats, 20s. Entrance and ring-side seats, 10s. Entrance only, 2s. 6d. Children under 14 free of charge. Return motor-coach fare from Aberdeen, approximately 10s.

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Therapeutic Substances (Prevention of Misuse) Bill

In our issue of February 21st we recorded the Second Reading in the Lords of the Therapeutic Substances (Prevention of Misuse) Bill.

During the Committee Stage, Lord Webb-Johnson moved an addition to Clause 2, sub-section 2 (which is intended to give power to relax restrictions imposed by the Penicillin Act, 1947), to provide that in exercising the power of making regulations (under this section) appearing to concern agricultural matters, the Royal College of Veterinary Surgeons should be one of the bodies consulted by the appropriate Ministers.

On behalf of the Government the Earl of Onslow was unable to accept this amendment but gave an assurance that before any regulations are made, either under Clause 1 or 2 of the Bill, the Minister of Health would consult the Minister of Agriculture and Fisheries, who in turn would undertake to consult the Royal College of Veterinary Surgeons on matters of veterinary interest as a whole before any recommendations by him were made to the Minister of Health. In view of this assurance Lord Webb-Johnson's amendment was withdrawn and the Bill agreed to without amendment. * * * * *

PERSONAL

Births.—Blanchard.—On February 26th, 1953, to Mary, wife of J. H. Blanchard, Leominster, a son, brother for Paula.

James.—At Tiverton, on February 2nd, 1953, to Joy, wife of R. A. James, M.R.C.V.S., son—Christopher.

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Marriages.—Maclachlan—Mitchell.—On February 7th, 1953, at St. Mary's Church, Plympton, Plymouth, Gordon Keith Maclachlan, B.Sc., M.R.C.V.S., only son of the late Major W. K. Maclachlan, D.S.O., and Mrs. A. J. Maclachlan, of Helensburgh, Dunbartonshire, to Kathleen Elizabeth Mitchell, M.S.R., C.T., only daughter of the late Rev. J. C. Mitchell, M.C., M.A., and Mrs. B. K. Mitchell, of Plympton, Devon.

Robertson—Wilson.—On February 23rd, 1953, at Cranworth House, Glasgow, William W. Robertson, M.R.C.V.S., 4, Broomley Drive, Giffnock, Glasgow, to Jean S. S. Wilson, M.R.C.V.S., "Bellevue," Kilmacolm.

Members of the profession present were: Miss Margaret S. P. Doak (bridesmaid), Mr. James M. Taylor, Mr. Norman Spence and Mr. John Sanderson.

Ministry's Veterinary Field Staff: Changes in Personnel.—The following were effected on Monday last, March 2nd:—

Mr. P. Baird, M.R.C.V.S., transfers from Dumfries to Head Office, Tolworth, as Divisional Veterinary Officer (on promotion).

Mr. O. Evans, M.R.C.V.S., appointed to the permanent staff as Veterinary Officer and stationed at Mold.

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Will.—Mr. H. A. Barrett, 71, Prince's Street, Nuneaton, veterinary surgeon, left £4,240 (net £4,190).

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R.C.V.S. OBITUARY

THE LATE MR. W. W. GOLDSMITH, M.R.C.V.S.

Mr. William Woods Goldsmith, of 9, Bancroft, Hitchin, whose death at the age of 87 years we recorded with much regret in our last issue, was known throughout Hertfordshire and beyond as an able practitioner and widely respected as a good friend and citizen.

Mr. Goldsmith was a Norfolk man, but lived and practised in Hitchin from 1887 (when he qualified) until his retirement in April, 1945, when the farmers of North Hertfordshire and Bedfordshire united to make him a presentation of a cheque and testimonial in appreciation of his services. The actual presentation, in Hitchin Corn Exchange, was made by Colonel J. F. Harrison, of King's Walden, Herts, who spoke of Mr. Goldsmith as having given of his best, for 56 years, without stint of time or convenience. The ceremony ended with musical honours for one who, in the words of *The Hertfordshire Express*, "had always been a friend to the farmers in North Hertfordshire"

After his retirement, Mr. Goldsmith continued to reside at 21, Bridge Street (the old house on the narrow Queen Street corner), until the death of his wife last May.

He leaves a daughter, Mrs. Mary Abba, of Croydon, and two sons—Mr. Alec Goldsmith and Mr. Philip Goldsmith (who is in New Zealand). His eldest son, Major Jack Goldsmith, died in India a few months ago.

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V.V.B.F. LADIES' GUILD DANCE AT DUMFRIES

Under the auspices of the above, the annual dance was held in the Cairndale Hotel, Dumfries, on January 9th this year. There were members and friends present from as far as Penrith on one side and Wigtown on the other, many of them having travelled over 50 miles to attend. The dance was declared a success by all and as a result the gratifying sum of £83 has been sent to Mrs. Mitchell, Edinburgh, for the fund.

The ladies' committee thank Mr. McQueen, of Messrs. W. & J. Dunlop Ltd., Dumfries, for his continued generosity, and all who supported the dance either by their presence or by giving donations.

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M.M.B.'s RECORD MONTHLY INSEMINATIONS

In its current issue *The Home Farmer* (the journal of the Milk Marketing Board) says that for the first time since the inauguration of the Board's A.I. service the total number of cows inseminated in any one month has exceeded 100,000 and adds: "This record was created in December, 1952, when 126,067 inseminations were carried out in the area serviced by the Board. It should be pointed out that this total is for first inseminations only and does not include repeats. Semen from over 635 bulls was used. It is not possible to give the number of cows bred artificially as a percentage of the total available for breeding during the month, but in many areas it must have exceeded the 50 per cent. mark. We do know that during the year over half the cows in the Praze (Cornwall), Honiton Clyst, Torrington (Devon) and Carmarthen (South Wales) areas were inseminated. The January total of inseminations is not available at the time of writing but we hope that it will exceed December's.

"We are now receiving progeny reports regularly on all our bulls over five years of age, and hope, therefore, to be able to assess their breeding ability at the earliest possible age. These reports, referring particularly to production, are submitted in the first instance by our dairy husbandry officers and then further inspections are carried out by our bull selection committees to ensure that conformation is satisfactory. From these reports and from other information supplied by our bureau of records we are able to select our best breeding progeny recorded sires. These 'star' bulls will be distributed as evenly as possible between our 24 centres, and our veterinary officers have been instructed to ensure that semen from them is used to inseminate the largest number of cows possible. In this way we will ensure as far as we can that all members receive service for some of their cows from our best breeding bulls. All bulls not satisfying our high standard both in respect of type and production are rigorously culled."

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Tsetse Fly Control

At a meeting of the Commonwealth Section of the Royal Society of Arts on February 24th under the Chairmanship of Professor Munro (Professor of Biology and Applied Entomology, London Univer-

sity), Mr. K. R. S. Morris, who has recently retired from the post of Director of the Department of Tsetse Control, Gold Coast, described the very interesting work which he had initiated on the control and eradication of human trypanosomiasis from a large, heavily infected area lying between the Volta and Niger rivers.

The special interest of this work is as an excellent example of eradication of a disease by entomological methods rather than by curative and prophylactic measures.

In this badly affected area the incidence of the disease had been very greatly reduced by means of itinerant teams of microscopists for diagnosis followed by mass treatment of the infected. This method held the disease in check, but did not eliminate it, and it was expensive.

Mr. Morris approached the problem by patient, systematic surveys in the field of the habits and habitats of the transmitting fly throughout the year.

The data obtained were analysed, and maps prepared. From the knowledge which accumulated it became apparent that any attack on the fly during the rainy season, when it was widely spread, had no hope of success. In the dry season, however, the flies were confined to strictly limited loci in the vicinity of the larger streams. Further, it became clear that these loci could be readily identified by the type of vegetation which grew there. The solution of the problem was found in the selective clearing of the shrubs which constituted the dry weather habitats of the tsetse fly. This was done in a systematic manner, starting at the head waters of the river systems. The results were markedly successful, and land along the rivers which had been abandoned by the people became habitable both by man and his domestic animals.

In addition to the purely entomological aspect of the campaign, problems of agriculture, animal husbandry, pastures and above all human relationships arose and had to be solved.

As the lecturer put it, the control of trypanosomiasis is as much an art as it is a science.

The solution of the problem as it confronted Morris in the Gold Coast is not generally applicable to other areas where conditions are very different, but the approach to the problem and the methods used carry valuable lessons for any area.

The lecture was a fascinating account of the amelioration of conditions over a very large area by unspectacular and little publicised devoted work of a small band of enthusiasts.

* * * * *

AREA ERADICATION PLAN FOR TUBERCULOSIS

Free Tuberculin Tests in Four New Areas

Following a review of progress made under the voluntary Attested Herds Scheme, four areas—one in England, one in Wales and two in Scotland—have been selected as the next to be developed as Tuberculosis Eradication Areas. The Minister of Agriculture and Fisheries announces his intention to declare these four areas, which are fully described below, as Tuberculosis Eradication Areas on March 1st, 1955. In the meantime, free tuberculin tests will be provided in those areas. When they become Eradication Areas, all herds in them will be tested compulsorily, and reactors will be slaughtered with payment of compensation.

The purpose of the free tests is to encourage farmers to clean up their herds and to qualify for entry to the Attested Herds Scheme and for the bonus payments provided under that scheme. If a farmer takes no steps to clean up his herd, or starts so late that his herd is neither supervised nor attested by the time that the Orders declaring the Eradication Areas come into operation, he will have lost his chance of qualifying for bonus payments.

Farmers in the four free-testing areas who wish to avail themselves of the offer of free tuberculin tests should apply to the Ministry's Divisional Veterinary Officer, or to the Secretary, Ministry of Agriculture and Fisheries, Hook Rise, Tolworth, Surbiton, Surrey, or, if in either of the two Scottish areas, to the Secretary, Ministry of Agriculture and Fisheries, Animal Health Division—Scottish Branch, 15, Moray Place, Edinburgh, 3. They should state the number of cattle in their herds, and the name of their veterinary surgeon.

The tests will be carried out free of charge by the Ministry's veterinary staff. They will be continued as long as necessary to enable the herd owner to qualify for admission to the Attested Herds Scheme and thus for bonus payments.

The four areas are as follows:—

English Area.—The counties of Cumberland and Westmorland: the Furness district of Lancashire: in the North Riding of Yorkshire, the Petty Sessional Division of Greta Bridge (*except* the parishes of Egglestone Abbey, Rokeby, Wycliffe with Thorpe, Ovington, and Hutton Magna); in the Petty Sessional Division of Gilling West, the parishes of Muker, Arkengarthdale, Melbecks, Reeth, New Forest, Marrick, Dalton, Gayles, Marske, Ravensworth, Kirby Hill and Whashton; and in the Petty Sessional Division of Hang West, the parishes of Hawes, High Abbotside, Low Abbotside, Askrigg, Grinton, Ellerton Abbey, Carperby cum Thoresby, Castle Bolton, Redmire and Preston under Scar: in the West Riding of Yorkshire, the parishes of Sedbergh, Garsdale and Dent: and in the County of Durham, the parishes of Forest and Frith, Newbiggin, Middleton in Teesdale, Eggleston, Langleydale and Shotton, and Marwood.

Welsh Area.—The counties of Brecon, Radnor, Merioneth and Montgomery.

Scottish Area.—(1) The counties of Midlothian, West Lothian, Fife, Clackmannan, Selkirk, Kinross and that part of Argyll not included in the present Eradication Area; in the county of Perth, the parishes of Blackford, Glendevon, Muckhart, Aberfoyle, Ardoch, Balquhidder, Callander, Dunblane and Lecropt, Killin, Kilmadock, Kincardine, and Port of Mentieth; and a small part of the mainland of the county of Inverness consisting of the parish of Arisaig and Moidart and any islands forming part of that parish; and so much of the parish of Glenelg as lies south of a line formed by Loch Nevis, the Finiskaig river, Lochan'a Mhaim, and the right of way to Loch Arkaig until it reaches the eastern boundary of Glenelg parish.

(2) The Outer and Inner Hebrides, forming part of the counties of Inverness and Ross and Cromarty.

The number of cattle in these areas, and the approximate number of herds already attested or supervised, is as follows:—

	Total cattle	*Cattle in attested and supervised herds*
English area	391,000	275,000
Welsh area	222,000	145,000
Scottish area (1)	185,000	112,000
Scottish area (2)	27,000	18,000
Total	825,000	550,000

* * * * *

ROYAL COLLEGE OF VETERINARY SURGEONS

Accessions to the Library for the Period Ended February, 1953

Banham: The veterinary surgeon's vade mecum (formerly veterinary posology). *Eighth edition*, W. A. Greig. London: Baillière, Tindall & Cox, 1952.

Biester, H. E. *and* Schwarte, L. H.: Diseases of poultry. *Third edition*. Ames: Iowa State College Press, 1952.

Burns, M.: Genetics of the dog. Farnham Royal, Commonwealth Agricultural Bureaux, 1952.

Clare, N. T.: Photosensitisation in diseases of domestic animals. Farnham Royal, Commonwealth Agricultural Bureaux, 1952. Commonwealth Bureau of Animal Health, Review Series, No. 3.

Glasgow. University: The book of the fifth centenary, Glasgow University, Glasgow [1952].

Gray, E. A.: Portrait of a surgeon. A biography of John Hunter. London: Robert Hale [1952].

Great Britain. Ministry of Agriculture and Fisheries: Handbook of orders relating to diseases of animals, 1951. London: H.M.S.O., 1952.

Hancock, R.: Memoirs of a veterinary surgeon. London: Macgibbon & Kee, 1952.

Hornby, H. E.: Animal trypanosomiasis in East Africa. London: H.M.S.O., 1949.

Leeney, H.: Home doctoring of animals. *Fifth edition*. London: *Farmer & Stockbreeder*, 1952.

Linton, R. G.: Veterinary hygiene. *Fourth edition*. Edinburgh: Green, 1952.

London, Royal College of Physicians of London: The nomenclature of disease. *Seventh edition*. London: H.M.S.O., 1948.

Merchant, I. A. *and* Packer, R. A.: Handbook for the etiology, diagnosis and control of infectious bovine mastitis. Revised *second edition*. Minneapolis: Burgess Publishing Co., 1952.

Pharmaceutical Society of Great Britain: Antibiotics. London: Pharmaceutical Press, 1952.

Rooney, J. R.: Guide to the dissection of the horse. Ithaca: Cornell Co-operative Society, 1951.

Seiden, R. *Compiler and editor*: Livestock health encyclopedia. New York: Springer Publishing Co., Inc., 1952.

Thomson, J. A.: The minds of animals. London: George Newnes, n.d.

Thornton, H.: Text-book of meat inspection. *Second edition*. London: Baillière, Tindall & Cox, 1952.

Wilson, G. S. *and others*: Non-pulmonary tuberculosis of bovine origin in Great Britain and Northern Ireland. London: National Association for the Prevention of Tuberculosis, 1952.

Wright, J. G.: Veterinary anaesthesia. *Third edition*. London: Baillière, Tindall & Cox, 1952.

SITING OF SLAUGHTERHOUSES

Inter-departmental Committee Appointed

The above committee for England and Wales will be under the Chairmanship of Mr. R. Herbert, C.B., C.M.G. The Vice-Chairman of the committee is Mr. L. W. Crawford, and the other members are Mr. B. C. Engholm (Ministry of Agriculture), Sir James Lythgoe, C.B.E., a retired Local Government Officer, Mr. H. F. Summers (Ministry of Housing) and Mr. H. Twinch, C.B.E., who recently retired from the post of Chief Livestock Officer in the National Agricultural Advisory Service. The terms of reference of the committee are:—

> "To prepare a plan recommending in what localities, subject to a policy of moderate concentration, slaughterhouses (other than in bacon factories) should be sited for the slaughter in England and Wales of cattle, sheep and pigs; to recommend an order of priority for new works and major reconstructions; to make recommendations on the general principles of siting and the facilities that should be provided in these slaughterhouses, and to report on the changes that may be necessary in existing legislation to secure the central regulation of siting and design of slaughterhouses."

The Secretary of the committee is Mr. V. F. Wood, M.B.E., whose address is Ministry of Food, Government Buildings, Epsom Road, Guildford, Surrey, to whom enquiries should be addressed by interested parties.

* * * * *

Export and Import of Cattle Semen

The following conclusions are arrived at, and recommendations made, in the report, to be dealt with more fully in a later issue, of the committee appointed by the Minister of Agriculture, under the chairmanship of Lord Oaksey, "to advise on the considerations which should govern the granting of licences for the export and import of cattle semen for the purpose of artificial insemination and on any other problems related thereto."

The committee recommends that if the trial export and re-import of dairy cattle semen which have been in progress is successful, the export of semen from this country should be permitted, providing certain conditions are fulfilled. These are: any such export should be under licence; from artificial insemination centres or under special licence that semen should be exported only to organisations and persons in importing countries that have been approved by the Minister of Agriculture; and that breed societies concerned should be consulted before licences are granted.

In granting licences, it is recommended that certain other considerations should also be taken into account. These are the suitability of the bull used for the country of reception, the effect of the export of semen on the cattle export trade to that country, and the standard of bulls concerned.

The committee does not recommend permitting the import of semen except for approved experimental purposes or on the special application of a breed society. No imports should be allowed from countries where virus diseases are enzootic.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

Ches.—Sinderland House Farm, Dunham Massey, Altrincham (Feb. 23rd).

Cumberland.—The Lake Farm, Blackford, Carlisle (Feb. 20th).

Derbyshire.—Thorney Hill Farm and Chapel House Farm, Snelston, Ashbourne (Feb. 23rd).

Dorset.—Broomhill Farm, Moreton, Dorchester (Feb. 21st).

Hants.—Hedgerow, Beech, Alton (Feb. 23rd).

Somerset.—Rugmoor Farm, Nempnett Thrubwell, Chew Stoke, Bristol (Feb. 23rd).

Sussex.—Glaziers Forge Farm, Dallington, Heathfield (Feb. 21st).

Yorks.—Draft Farm, Flaxton, York (Feb. 20th).

FOOT-AND-MOUTH DISEASE:

Yorks.—North Milford, Grange, Tadcaster (Mar. 2nd).

FOWL PEST:

Lancs.—"Ashfield," Oak Ince Avenue, Ingol, Preston (Feb. 20th).

SWINE FEVER:

Berks.—North Farm, Fawley, Wantage (Feb. 26th).

Cambs.—Willow Lodge Farm, Hook's Drove, Murrow, Wisbech (Feb. 24th).

Ches.—Littleton Old Hall, Littleton, near Chester (Feb. 27th).

Cornwall.—Trelowcth Farm, Pool, Redruth (Feb. 20th); Pendarves, Tremough Dale, Penryn; Hillcrest, Lanner Hill, Redruth; The Bungalow, Tolvaddon, Pool, Redruth (Feb. 23rd); Higher Penscarn Farm, Summercourt, Newquay; Cusvath, Coombe Kea, Truro (Feb. 24th).

Essex.—Jacklett's Farm, Danbury, Chelmsford; Willows Farm, Edwardstone, Colchester (Feb. 20th); Thors Farm, Thorrington, Colchester (Feb. 23rd); The Patches, Swallows Cross, Blackmore (Feb. 26th).

Lancs.—Moor Close Lane Piggeries, Over Kellett, Carnforth (Feb. 24th); Piggeries at rear of Deacon Road, off Frederick Street, Widnes (Feb. 25th); Sunnyfield, Red Well, Over Kellett, Carnforth (Feb. 26th); Knott Booth Farm, Milnrow, Rochdale (Feb. 27th).

Lincs.—9 Holding, Bank Farm, Gosberton, Spalding (Feb. 25th).

Middsx.—Westway Farm, Charlville Lane, Hayes (Feb. 24th).

Norfolk.—The Homestead, Common Road, Ashill, Thetford (Feb. 23rd).

Northants.—Showsley Grounds, Easton Neston, Towcester (Feb. 24th).

Notts.—Trent Valley Farm, North Leverton, Retford (Feb. 26th).

Salop.—The Cottage Farm, Marton (Feb. 23rd); Marton, Gobowen, Oswestry (Feb. 26th).

Staffs.—363, Ford Green Road, Norton, Stoke-on-Trent; Brammer Street, Bradeley, Stoke-on-Trent (Feb. 25th); Pig Farm, Enville Road, Wall Heath; Crook House Farm, Pinfold Lane, Great Barr, Walsall (Feb. 27th).

Suffolk.—Oakmount, Little Bealings, Woodbridge (Feb. 23rd); Hopton End Farm, Market Weston (Feb. 24th); Palfrey Farm, Brantham (Feb. 26th).

Surrey.—Homestead Farm, School Road, Smallfield (Feb. 26th).

Sussex.—Rowhook Manor Estate, Slinfold, Horsham (Feb. 21st).

Warwicks.—3 Myrtle Place, Pershore Road, Selby Park, Birmingham, 29 (Feb. 24th).

Worcs.—Weight's Farm, Redditch (Feb. 27th).

Yorks.—West Lodge, Kirkleatham, Redcar (Feb. 20th); Danum House, Little Weighton, Hull; North Lodge, Poole, Burton Salmon, Leeds (Feb. 23rd); 28, Leasome Road, Leeds, 10; Making Place Farm, Soyland, Ripponden, Halifax; Parnham Farm, Ruton, Malton (Feb. 27th).

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BRITISH AGRICULTURAL HISTORICAL SOCIETY

The first general meeting of the Society will be held at the University of Reading on Monday, April 13th, 1953. A limited amount of accommodation has been arranged in the University Halls of Residence for the night of Sunday, April 12th, and can be provided for Monday, April 13th, if required.

A conference registration fee of 3s. will be payable by those wishing to attend and lunch will be provided at 5s. 6d., tea at 2s. Visits to the Museum of English Rural Life will be arranged during the day for those attending the conference. Registration fees should be sent to Mr. J. W. Y. Higgs, Secretary to the Society, who is Keeper of the Museum of English Rural Life, Shinfield Road, Reading, Berks.

The conference will open at 10.30 a.m. with the adoption of the constitution of the Society that has been drafted by the provincial committee elected at the inaugural meeting last September, and the election of officers. Following this formal business, Sir James Scott Watson will read a paper on "The Scope of Agricultural History."

Lunch will be served at 12.45 p.m. and after it an address of welcome will be made by the Vice-Chancellor of Reading University. At 2 p.m. Sir Frank Stenton will read a paper on "The Manor in English History."

The Society has the support of several influential bodies and individuals and will extend a warm welcome to all those interested. It is not intended that the membership should be exclusively academical. Indeed, it is hoped that it will receive the support of all those, both farmers and townsmen, for whom the history of our rural life has so absorbing an interest.

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THE HARRY STEELE-BODGER MEMORIAL FUND

All donations to this Fund should be sent to:—

S. L. Hignett,
Steele-Bodger Memorial Fund,
B.V.A.,
36, Gordon Square,
London, W.C.1.

Cheques, postal orders, etc., should be made payable to "Steele-Bodger Memorial Fund."

International Pony-breeders' Federation Congress

The Second Congress of the International Pony-breeders' Federation was held in Edinburgh from February 23rd to 28th, 1953, when the Earl of Dalkeith was elected President. Other office bearers include: Vice-Presidents—Mr. Gunnar Bjarnason, Iceland; Mr. S. Trodhal, Norway, and Mr. Alsehe, Netherlands; International Secretary: Herr F. H. Thies, 14b, Urlau, Leutkirch, Germany; Treasurer: Mr. Addink, Netherlands. In addition, zone secretaries for several countries were elected. These included Sir Berkeley Piggott for South England, Mr. F. F. Collingwood for North England, Captain H. C. Paterson for Scotland, and Mr. J. A. George for Wales.

An official welcome was given to the delegates in the North British Hotel on the evening of the 23rd by Mr. McNair Snadden, Joint Under-Secretary of State for Scotland. This was followed by a civic welcome in the City Chambers.

The business meeting was opened by the retiring President, Mr. W. M. Mitchell, of the Royal (Dick) School of Veterinary Studies, who made a special point of the practical value of the preservation of native breeds of ponies.

High-lights of the Congress included a visit to the experimental herd of Exmoor ponies in the Edinburgh Zoo, a pony show at Redford Barracks, and the Congress dinner, which incidentally was the first public engagement of the Earl of Dalkeith and his Countess since their marriage.

Papers were read by G. Bjarnason, of the Agricultural College of Hvanneyri, Iceland; Professor McTaggart Cowan, of the University of British Columbia, and J. G. Speed, of the Royal (Dick) School of Veterinary Studies.

In addition reports on the nine native breeds of British ponies were given. Breed reports from other countries included:—

Icelandic ponies, G. Bjarnason; Netherlands, Mr. Alsche; Gottland Russ of Sweden, Mr. B. Ljungen; Hesse (Germany), Dr. Uppenborn; Bosnian (Yugoslavia), Professor Hrasnica, of the University of Sarajevo; Carmague (France), Dr. Verger, Nimes; de Mérens (France), M. de Sentenac, Tarbes; Barthais (France), M. de Mezerac, Pau; Breeding aim in Germany, Professor Hans Lowe, Hanover.

A particularly interesting communication on the importance of the veterinary profession in animal husbandry and animal breeding was sent by Vet. Rat. Dr. H. Bauer, Wahlwies.

Membership of the Federation costs £1 for an ordinary member, 10s. for an associate member who joins through his Veterinary Association or through his Pony Breed Society.

The next Congress will be held in Holland, at Utrecht, in September, 1954.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

JACK MOTTON MEMORIAL FUND

(Sponsored by the Western Counties Division, B.V.A.)

Sir,—The Western Counties Division, B.V.A., are inaugurating a fund to provide a Memorial to the late Jack Motton, the Honorary Secretary of the Division from 1930 till his death in 1952, as a tribute to his work for the Veterinary Profession.

His efforts for this Association and its parent body, the British Veterinary Association, are well known to all, as also were his activities as an examiner and councillor of the Royal College of Veterinary Surgeons; locally his eminence as a practising veterinary surgeon at Penzance was reflected over a wide area, and this appeal has been launched in response to many enquiries from within and without the Profession for some permanent Memorial both at the Western Counties Veterinary Association and at the Headquarters of the British Veterinary Association.

Yours faithfully,

L. E. Perkins.
J. A. Dall.
H. F. C. Hebeler.
G. Atkinson.
E. R. Parker (Hon. Secretary).
Committee.

Donations may be sent to: R. Barons Nelder, M.R.C.V.S., Renleigh, Pinhoe, Exeter, or Miss E. R. Parker, M.R.C.V.S., Rosevean, Penzance, to either of whom cheques should be made payable.

PROPOSED AMENDMENTS TO THE PENICILLIN ACT

Sir,—Correspondence in *The Veterinary Record* for February 14th (page 116) focused attention on the possibility that the incorporation of antibiotics in animal feeding-stuffs might result in the development of antibiotic-resistant strains of pathogenic bacteria and in changes in the microflora of the alimentary tract leading to avitaminosis. An even more likely consequence of the indiscriminate administration of antibiotics is disorders associated with pathogenic fungi.

In man the development of severe and even fatal moniliasis (*Candida albicans* infection) of the digestive tract and the lungs following antibiotic therapy is not uncommon (see, for example, the series of cases reported in the U.S.A. by Woods, Manning & Patterson[1]). The reports of Hulse[2] and Aschner[3] indicate that similar complications occur in animals and in the course of this survey we have received 34 fungi, mostly yeasts, which have been isolated from the milk of mastitis cases treated with penicillin. Seligman[4] has shown that aureomycin has certain virulence-enhancing properties when injected into mice with *Candida albicans* and in Canada Quinn[5] has already recorded intestinal moniliasis of pigs fed on a diet supplemented with antibiotic residues.—Yours faithfully, G. C. Ainsworth and P. K. C. Austwick, A.R.C. Survey of Animal Mycoses, University College, Exeter, Devon. *February 24th*, 1953.

[1] *J. Amer. med. Ass.* **145**. 207. 1951.
[2] *Vet. Rec.* **64**. 210. 1952.
[3] *Refuah Veterinarith.* **4**. 36. 1947.
[4] *Proc. Soc. Exp. Biol. Med.* **79**. 481. 1952.
[5] *Canad. J. Comp. Med.* **16**. 265. 1952.

. . . . .

Sir,—In view of the publicity recently given to the possible desensitisation of pathogenic organisms in the animal body following the feeding of rations containing penicillin I feel bound to comment as follows.

It seems to me that although the danger of the production of penicillin-resistant strains of bacteria must be borne in mind, many of us have jumped too hastily to the conclusion that this danger is inevitable should the practice become widespread.

With the exception of enteric organisms, any penicillin added to an animal's food must surely be absorbed into its blood stream before any desensitisation can occur. I have always been led to understand that, due to its fairly rapid destruction, the absorption of penicillin from the intestinal tract is poor unless it is protected by the simultaneous administration of buffering agents. Thus it may well be that the small amounts present in the feeding-stuffs are absorbed in quantities insufficient to have any action, lethal or resistance-producing, on organisms remote from the gut.—Yours faithfully, Peter Burman, "The Yew Trees," Stratford Road, Hockley Heath, Birmingham. *February 21st*, 1953.

. . . . .

Sir,—I concur with Mr. Macfarlane in having every trust in the capability of the Agricultural Research Council to look into the possible hazards of feeding antibiotics to livestock, especially pigs. My doubts arise regarding the wisdom of the apparent haste of certain members of Parliament to rush through the proposed amendment to the Penicillin Act before the Agricultural Research Council has had time to complete its investigations and publish its conclusions.—Yours faithfully, D. A. P. Grattan, Streatley House, Streatley, Berks.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th February, 1953	48	15	13	—	84
Corresponding period in—1952	20	5	7	—	47
1951	25	2	110	1	51
1950	19	4	6	3	—
1st January to 15th February, 1953 ...	174	18	146	—	199
Corresponding period in—1952	62	22	39	—	114
1951	81	15	368	4	124
1950	56	4	27	13	—